Application For
PSCW Certificate of Public Convenience and Necessity
and
WDNR Utility Permit

Howards Grove-Erdman Project

PSCW Docket No. 137-CE-195

June 2021

ATC	American Transmission Company
BMP	Best Management Practice
CPCN	Certificate of Public Convenience and Necessity
Commission	Public Service Commission of Wisconsin
DATCP	Department of Agriculture, Trade and Consumer Protection
DBH	Diameter at breast height
EMF	Electromagnetic Field
FCL	Forest Crop Law
GIS	Geographic Information Systems
kV	Kilovolt
MFL	Managed Forest Law
MISO	Midcontinent Independent System Operator, Inc.
MSL	Mean Sea Level
MF	Magnetic Field
NHI	Wisconsin Natural Heritage Inventory
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
PSCW	Public Service Commission of Wisconsin (Commission)
PSD	Planning Scoping Document
ROW	Right-of-way
TCSB	Temporary Clear Span Bridge
USACE	United States Army Corps of Engineers
WDNR	Wisconsin Department of Natural Resources
WHPD	Wisconsin Historic Preservation Database
WisDOT	Wisconsin Department of Transportation

APPLICATION FOR PSCW CERTIFICATE OF CONVENIENCE AND NECESSITY AND WDNR UTILITY PERMIT[1]

1.0 PROJECT OVERVIEW

Description

The Howards Grove – Erdman Transmission Line Project (Project) involves the construction of a new, single-circuit 138 Kilovolt (kV) transmission line from the Howards Grove Substation in the town of Herman to the Erdman Substation in the town of Sheboygan. The Project will also include modifications at the Howards Grove, Erdman, Forest Junction and Lodestar substations.

Need

The Sheboygan area possesses unique characteristics contributing to the need for increased transmission facilities due to a large point load that is generally on 24 hours a day, seven days a week. Additionally, there are only two 345 kV circuits and one 138 kV circuit feeding the area. For approximately seven miles, the two 345 kV circuits share common towers, resulting in the potential of a single point of failure for both 345 kV lines. Finally, the only significant generation in the area (Edgewater Generating Station) is scheduled to be retired in 2022.

Cost

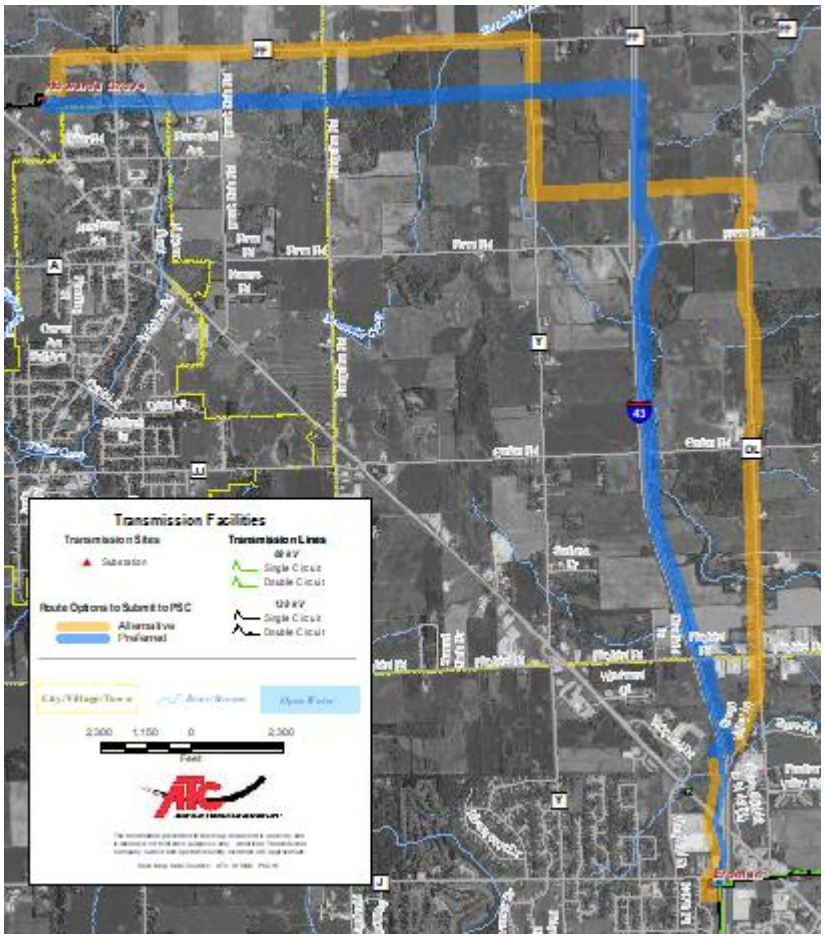
ATC estimates that the Project will cost $25,606,000 for the Preferred Route and $31,701,000 for the Alternate Route.

Schedule

Construction is scheduled to begin in May of 2022 and complete in December of 2022.

[1] This Application was prepared in accordance with the PSCW and WDNR *Application Filing Requirements Transmission Line Projects*, Version October 2017, and the *Application Filing Requirements Substation Projects*, Version October 2017 (collectively referred to as the Application Filing Requirements).

Route and Location



1.1 Owners and Investors

American Transmission LLC and ATC Management Inc., its corporate manager, (collectively ATC), W234 N2000 Ridgeview Parkway Court, Waukesha, Wisconsin 53188, propose to construct the Howards Grove-Erdman Project, which will be 100%-owned by ATC.

1.2 Agreements

ATC has not entered into any contractual agreements related to this Project with any developer to construct, finance, lease, use or own transmission facilities.

1.3 Project Location and Endpoints

The Project involves constructing a new 138 kV Transmission Line from the Howards Grove Substation to the Erdman Substation in Sheboygan County.

1.4 Impacted Cities, Villages, and Townships

The Project will impact the following locations, all located in Sheboygan County:

- town of Herman
- town of Mosel
- town of Sheboygan
- village of Howards Grove

1.5 PSCW Review

1.5.1 Type of Application

Pursuant to the requirements of Wis. Stat. §§ 1.11, 1.12, 196.025, 196.49 and 196.491, and Wis. Admin. Code chs. PSC 4, 111 and 112, ATC hereby applies (Application) to the Commission for a Certificate of Public Convenience and Necessity (CPCN) together with any other authorization needed to construct the proposed Project as set forth in further detail below.

Through this Application and pursuant to Wis. Stat. ch. 283 and §§ 30.025(1s), 30.19, 30.123 and 281.36; and Wis. Admin. Code chs. NR 103, 216, 299, and 320, ATC hereby applies to the Wisconsin Department of Natural Resources (WDNR) for a Utility Permit. The WDNR permits and authorizations necessary to construct the Project are listed in Section 8.

By this filing, ATC confirms its understanding that through the pre-application process provided for in Wis. Stat. § 30.025(1m) the WDNR, the PSCW, and ATC have conferred and made a preliminary assessment of the Project's scope and alternatives and have identified potentially interested persons. ATC is also aware, in accordance with Wis. Stat. §§ 30.025(1m)(b) & (c), of the information that it is required to provide and the required timing for the information submissions.

1.5.2 Type of Commission Action

ATC believes this Project is categorized as a Type II action pursuant to Wis. Admin. Code § PSC 4.10(2) and Table 2, subsection (f). Information necessary for the initial preparation of an Environmental Assessment is provided as part of this Application.

1.5.3 Certificate of Public Convenience and Necessity (CPCN) Exemption

This Project does not qualify for a CPCN exemption under Wis. Stat. § 196.491(4)(c).

1.5.4 Expedited Review

ATC is not seeking an expedited review of this Project.

1.6 Project Details and Project Area Information

1.6.1 Location of Route(s) and Associated Facilities

The proposed Project consists of a new 138 kV transmission line from the Howards Grove Substation to the Erdman Substation, and will route through the towns of Brigham, Mosel, and Sheboygan, and the village of Howards Grove all in Sheboygan County.

The Project will also include modifications at the Howards Grove, Erdman, Forest Junction and Lodestar substations all in Sheboygan County.

1.6.2 The Footprints of Associated Facilities

The Erdman, Forest Junction and Lodestar substation footprints will not change as the existing substation yards have adequate room to accommodate new equipment associated with the scope of the Project.

Howards Grove substation will be expanded approximately 100 feet east to accommodate the new line position and associated equipment. This site footprint was planned for the ultimate buildout associated with this Project, and provisions are in place now (site grading, drainage design, etc.) to accommodate it.

1.6.3 Generalized Geology, Topography, Land Cover and Land Use

Generalized Geology

Glaciation has largely determined the physiography, topography, and soils of the region and is similar for both the Preferred and Alternate Routes and each substation. Bedrock is classified as being a part of the Engadine Formation primarily comprised of dolostone with little to no chert (Wisconsin Geology, 2021). Surface geology, classified as Valders Member Kewaunee Formation generally consists of compact crudely stratified or unstratified layers of clays to clay-silt soils. When nearing Lake Michigan, sand and gravel soils tend to develop over the clay layers and can be classified as being generally well sorted due to historic wind and water actions.

Topography

The Project area along each of the Preferred and Alternate Routes and the Howards Grove and Erdman substations is relatively flat with gently rolling topography along stream corridors. Topographic changes in the Project area are generally gradual in nature and increase in elevation to the west. Approximately 70 feet of elevation change occurs across the Project area with the highest elevations nearing 735 feet Mean Sea Level (MSL) toward the northern and western end of the Project area to 665 feet MSL, closer to Lake Michigan.

Land Cover

Land Cover is similar for both the Preferred and Alternate Routes and each substation, with no significant differences observed. Each route is centrally located between Lake Winnebago and Lake Michigan in Sheboygan County. These areas are primarily rural agricultural land with interspersed woodlands, wetlands, and developed properties. Increased environmental sensitivities are primarily found along portions of the Project area west of the interstate corridor where development is less extensive.

Land Use

The primary land use within the Project Area is for agricultural production. Agricultural practices consist primarily of non-specialty row crops; generally hay, corn, and soybean production. Pastureland and fallow fields are located along the Alternate Route. The proposed routes have also been designed to follow existing utility and transportation corridors including county, state, and interstate highways. Other land uses include undeveloped woodlands, wetlands, grasslands, and both low and high density urban/developed lands.

1.6.4 Special or Unique Natural or Cultural Resources

Natural Resources

Special or Unique Natural Features were reviewed using desktop resources and environmental field surveys for the potential to occur along both the Preferred and Alternate Routes. Based on these reviews, the Project area intersects multiple wetland and waterway areas (discussed further in Sections 6.0 and 8.0) but does not intersect any special or unique natural resources. No State or Federally managed properties (for the purpose of the protecting natural resources), unique landforms, rare natural communities, migratory animal concentrations sites, outstanding or exceptional water resources, parks or recreation areas, scenic roads/highways, or conservation easements were identified as being present along either the Preferred or Alternate Routes.

Cultural Resources

ATC's consultant, Cardno Inc. (Cardno), reviewed and evaluated cultural resources along the Preferred and Alternate Routes. An archaeological and historical resources literature review of the Project area was completed to assess the potential effects of the Project on archaeological and cemetery/burial sites and architectural/historic resources (discussed further in Section 6.7). This included review of the Archaeological Site Inventory, the Architecture and History Inventory, the Archaeological Reports Inventory and associated site files, and the national and state registers of historic places (Wisconsin Historic Preservation Database (WHPD) 2021).

A review of the Wisconsin Archaeological Reports Inventory database revealed that 16 previous archaeological surveys have occurred within portions of the Project area (WHPD 2021). Many of these surveys resulted in the formal documentation of cemetery sites and the identification of

new archaeological sites. A total of 14 previously reported archaeological and cemetery/burial sites are located within a one-mile radius of the two proposed routes. Of these, two archaeological sites are located within the proposed Preferred Route right-of-way (ROW), with one additional site located within 300 feet of the proposed Preferred Route ROW. One cemetery is located within 100 feet of the Alternate Route proposed ROW.

A total of 37 previously identified architectural/historic resources are located within a one-mile radius of the two proposed routes. Of these, 35 of the architectural/historic resources have not been evaluated for eligibility for listing on the National Register of Historic Places. Three of these resources are located in close proximity to the Preferred Route ROW and six are located in close proximity to the Alternate Route ROW. None of these resources will be directly impacted by either proposed Route as currently designed and aesthetic impacts will be minimized to the extent practicable. Due to confidentiality requirements, the report documenting the archaeological and historical resources literature review conducted by Cardno has been submitted to the PSCW Historic Preservation Officer under a separate cover.

1.6.5 Areas of Residential Concentrations and Urban Centers

Both the Preferred and Alternate routes exist near multiple residential properties, urban areas, and undeveloped rural properties. The municipal boundaries of the towns of Sheboygan, Herman, and Mosel, and the village of Howards Grove are intersected by both proposed routes. The Preferred Route contains approximately 1/3 the number of single-family residences within a 300-foot radius compared to the Alternate Route. The Common Route contains six homes and two apartment buildings with a total of 79 units. Generally, each route has been planned to avoid direct impacts to individual residences and businesses.

1.6.6 Transmission Configuration

The proposed Project will construct a new single-circuit 138 kV transmission line on self-supporting steel monopole structures. Select structures located on the Erdman Substation property will support the new circuit as well as existing circuit(s) as they exit the substation. There are distribution lines along the proposed routes that may require removal and relocation as described in **Section 5.3**.

1.6.7 Proposed Project ROW

The typical ROW width for the Project's transmission line facilities is 80 feet. By proposing to co-locate the Project transmission facilities and share other infrastructure ROW, the amount of required new ROW width for the Project transmission facilities, where ROW Sharing occurs, has been reduced. Portions of the proposed routes are completely contained within existing transmission line ROW. Other portions of proposed ROW overlap with interstate, highway or other roads. The percent of shared ROW is included by proposed route in **Appendix B**, **Tables 1, 2** and **7**, and further discussed in **Section 5.4**.

1.7 Other Agency Correspondence, Permits and Approvals

1.7.1 Agency Correspondence

Copies of ATC correspondence with all government agencies concerning the Project are included in **Appendix H**.

1.7.2 State and Federal Permits/Approvals Required

All state and federal permits and approvals required for this Project and their status are listed below.

Federal			
Agency	**Activity**	**Permit**	**Status**
USACE	Wetland Impacts	Section 404 of the Clean Water Act	ATC will apply upon receipt of a PSCW Order.
USACE	Archaeological Review	Section 106 National Historic Preservation Act	USACE will initiate consultation upon receipt of ATC's permit application.
USACE	Impacts to federally protected (threatened/endangered) species	Section 7 Endangered Species Act	USACE will initiate consultation upon receipt of ATC's permit application.
Federal Aviation Administration	Erection of tall structures near airports/heliports	FAA 7460 (Notification)	ATC will apply upon receipt of a PSCW Order.

State			
Agency	**Activity**	**Permit**	**Status**
DATCP	Potential use of eminent domain on more than 5 acres of any farm	Agricultural Impact Notification (AIN)/Agricultural Impact statement (AIS)	An Agricultural Impact Notification has been provided to DATCP please see **Appendix H, Exhibit 3**.

State			
Agency	**Activity**	**Permit**	**Status**
WisDOT	Utility Crossing/Longitudinal Occupancy (roads)	Utility Permit DT 1553	A preliminary constructability report has been submitted to WisDOT. ATC will apply for necessary permits on the ordered route.
WisDOT	Driveway Construction	DT1504 – Connection to State Trunk Highway	ATC will apply for these permits if necessary.
WisDOT	Oversize Loads or Excessive Weights	Wis. Stat. ch. 348 Vehicles – Size, Weight and Load; Wis. Stat. § 348.25-Vehicle Weight and/or Load Permit	Construction has not identified oversize loads or weights. ATC will apply for necessary permits if conditions change.
WisDOT	Utility Crossing/ Longitudinal Occupancy (WSOR)[2]	Utility Permit DT 2036	The proposed project will not cross or share WSOR ROW.
Wisconsin Historical Society; State Historical Preservation Officer	Archeological Review of impacts to previously documented cultural resources	Approval of Archaeological Surveys (Wis. Stat. § 44.40 and Section 106 of National Historic Preservation Act)	Pending. Literature review submitted to PSCW Historic Preservation Officer under separate cover.
WDNR	Wetland and Waterway impacts	Utility Permit	Pending. Application submitted within **Appendix F**.

[2] Wisconsin Southern Railroad.

State			
Agency	**Activity**	**Permit**	**Status**
WDNR	Ground Disturbing Construction Activities	Stormwater/Erosion Control – NR 216	ATC will apply upon receipt of PSCW Order.
WDNR	Protected Species coordination	Certified Endangered Resources Review	The redacted ER Review is provided as **Appendix F, Exhibit 2**.
WDNR	Dewatering	WPDES general permit (WI-0049344-05-0)	General permit coverage (FIN: 64724) for ATC dewatering discharges statewide.

1.7.3 Local Permits

Upon issuance of a CPCN, local ordinances that would preclude or inhibit the Project would be preempted by Wis. Stat. § 196.491(3)(i). However, ATC applies for those permits and other authorizations governed by local ordinances (county, town, village or city) that involve matters of public safety. Because the ordinances of the local units of government vary, each construction project may involve different local permits or authorizations. The public safety-related permits or authorizations that ATC applies for generally include road crossing permits, road weight limits, noise abatement ordinances (usually involving hours or times of construction), building permits (for such construction as control houses), and other similar public safety permits or authorizations that may be required by local ordinance.

Local ordinances also often address siting and location issues for the construction of utility facilities or land use issues including recreational uses and aesthetics. These types of authorizations would require conditional use permits, zoning permits or variances, which often involve quasi-judicial proceedings and the exercise of discretion on the part of the local unit of government as to whether the authorization or permit may be granted. Because the Commission's statutory obligation is to address the siting of proposed utility facilities, and to address land use, recreational use and aesthetics in the siting and route selection for transmission lines, ATC does not apply for these types of permits or authorizations. However, ATC works with all local units of government to ensure that the representatives of those units of government affected by ATC's proposed construction projects are informed concerning ATC's proposed construction activities and requests that the local unit of government provide the

PSCW and ATC with its comments or concerns regarding the siting and location of the proposed Project.

The following local permits and ordinances would apply to the proposed Project absent the provisions of Wis. Stat. § 196.491(3)(i):

- Sheboygan County: General Zoning and Shoreland/Floodplain Zoning Permit
- Sheboygan County: Erosion Control/Shoreland Erosion Control Permit
- Village of Howards Grove: Erosion Control Permit

1.7.4 Railroad

The proposed Project will not cross or share railroad ROW.

1.7.5 Pipeline

The proposed Project will not cross or share ROW with any pipeline.

1.7.6 WisDOT

Proposed routes that share ROW or cross State (STH) and/or United States Highway (USH) along all or part of the route are provided in Table 1.7.6-1 below:

Table 1.7.6-1 – Highway Corridor Sharing and Crossings

ROUTE	SPAN OR STRUCTURE	AFFECTS	NOTES
Preferred	P3-P4	WI-42	Wires cross highway
Preferred	P22-P23	I-43	Wires cross highway and structure P23 on I-43 ROW
Preferred	P23-P28	I-43	Structures on I-43 ROW
Preferred	P30	WisDOT Land	Structure is on WisDOT land
Preferred	P31-P48	I-43	Structures on I-43 ROW
Preferred	P48-P49	I-43	Wires cross highway and structure P48 is on I-43 ROW
Preferred (part of common route)	P49-P50	I-43	Overhang
Preferred (part of common route)	P51-P52	WI-42	Wires cross highway

Preferred (part of common route)	P52-P53	WI-42/I-43	Overhang
Alternate	A4-A5	WI-42	Wires cross highway
Alternate	A29-A30	I-43	Wires cross highway
Alternate	A54-A55	I-43	Wires cross highway
Alternate (part of common route)	A55-A56	I-43	Overhang
Alternate (part of common route)	A57-A58	WI-42	Wires cross highway
Alternate (part of common route)	A58-A59	WI-42/I-43	Overhang

ATC and its consultants met with WisDOT representatives to discuss the Project and to give WisDOT an opportunity to provide input during the routing and siting process. A general overview of the Project was provided to WisDOT staff at these meetings and ideas about the Project were shared. A preliminary constructability report has been submitted to WisDOT to formally document any issues associated with the Project along the I-43 corridor. The preliminary constructability report should expedite the WisDOT permitting process if a route is selected by the Commission.

In addition to reviewing constructability issues associated with existing highway facilities, consideration was given to WisDOT's future highway expansion plans. This information was used to help develop the location of alternative alignments with respect to WisDOT corridors.

The preliminary constructability report was submitted to WisDOT for review and comment. The text of this report is provided in **Appendix H, Exhibit 1**. WisDOT has completed its review and provided overall acceptance of the shared corridor, which already incorporates adjustments made to respond to future WisDOT expansion plans and the routing through selected interchanges. A copy of the WisDOT communication accepting the constructability report is provided as **Appendix H, Exhibit 4**. When the Project's route is selected by the Commission, ATC will meet with WisDOT to discuss any remaining concerns and incorporate the resolutions to these concerns in the Project's detailed engineering.

1.8 Construction Schedule

1.8.1 Construction Schedule

ATC anticipates constructing the Project according to the following schedule:

Project Activity	Preliminary Date
Submittal of Application for PSCW CPCN and WDNR Utility Permit	July 2021
Anticipated PSCW Order	January 2022
WDNR Utility Permit Issuance - Anticipated	February 2022
Start Construction	May 2022
Project In-Service Date (ISD)	December 2022

1.8.2 Outage Constraints

There are no known outage constraints at this time.

1.9 Project Maps

Consistent with the Application Filing Requirements, a set of Project maps is provided in **Appendix A, Figures 1.** The maps showing the Proposed and Alternate routes and other Project data are provided on aerial photographs and include environmental, parcel, land use, and existing utility/infrastructure data. Also included is environmental information required to support WDNR permitting activities. ATC is providing separately to the Commission, in electronic format on discs, Geographic Information System (GIS) data files supporting the mapping.

1.10 ESRI ArcGIS Data Files

All Project maps were created using ESRI ArcGIS Version 10.7.1. A spreadsheet of each GIS file, including the description of the data, the data source, and the date when the data was generated or collected is provided as part of the GIS data disc.

1.11 Mailing Lists

The Mailing Lists are provided in Microsoft Excel format separately to the Commission.

The information used to compile the landowner mailing lists was derived from Sheboygan County tax parcel data. ATC expects that this information is reasonably accurate but recognizes that changes in parcel ownership occur over time.

Data regarding local officials is available from the applicable counties and municipalities. ATC expects that this information is reasonably accurate but recognizes that changes in personnel occur over time.

2.0 PROJECT NEED AND ENGINEERING

Overview

In 2020, Alliant Energy announced the 2022 retirement of the Edgewater #5 generating unit. Prior to the Edgewater unit retirement, the Sheboygan area is susceptible to unacceptably low voltages and the potential for loss of load. With the Edgewater unit retired, the risk for load loss under contingency conditions becomes even greater.

As a result of this generator retirement, Sheboygan area load, generation and transmission capacity become further out of balance. This imbalance drives the reliability need for system reinforcements within the Sheboygan area. This means that the risk of voltage instability and the amount of load that could be lost for outages is increasing.

Please refer to the following sections for details regarding the needs driving the Project's scope.

2.1 Project Need

The Sheboygan area possesses unique characteristics contributing to the need for increased transmission facilities due to a large point load that is generally on 24 hours a day, seven days a week. Additionally, there are only two 345 kV circuits and one 138 kV circuit feeding the area. For approximately seven miles, these two 345 kV circuits share common towers, resulting in the potential of a single point of failure for both 345 kV lines. Finally, the only significant generation in the area (Edgewater) has announced retirement.

ATC performed analysis based on the Midcontinent Independent System Operator, Inc. (MISO) MTEP19 2024 and 2029 Summer Peak and 2024 Off-Peak modeling scenarios for NERC Categories that do not allow loss of load. ATC found no limitations for these types of contingencies.

ATC performed analysis on the 2024 and 2029 Summer Peak and 2024 Off-Peak modeling scenarios for NERC Categories that do allow loss of load. ATC found that some contingencies result in overloads and extremely low voltages, indicating the potential for voltage instability.

For NERC Categories that allow loss of load, the following are the most severe contingencies leading to the potential for voltage instability:

- Category P6: Edgewater-Lodestar 138 plus 20th Street-Erdman 138
- Category P6: Edgewater-Lodestar 138 plus Edgewater-Edgewater Distribution 138
- Category P6: Edgewater 345/138 T21 plus Edgewater 345/138 T22
- Category P7: Edgewater-South Fond du Lac 345 plus Edgewater-Cedarsauk 345 tower

NERC Reliability Standards do not allow system instability such as voltage instability without reinforcing the system.

In the Off-Peak modeling scenario, several prior maintenance plus NERC Category P1 contingencies indicate unacceptably low voltages and the potential for voltage instability. The following are the most significant contingencies:

- Prior Maintenance + Category P1: 20th Street-Sauk Trails 138 (X-37) plus outage of Edgewater-Lodestar 138 (X-38)
- Prior Maintenance + Category P1: Edgewater-Sauk Trails 138 (X-37) plus outage of Edgewater-Lodestar 138 (X-38)
- Prior Maintenance + Category P1: Edgewater-Huebner 138 (X-38) plus outage of Edgewater-Edgewater Distribution 138 (X-153)
- Prior Maintenance + Category P1: Edgewater-Huebner 138 (X-38) plus outage of Edgewater-20th Street 138 (X-37)
- Prior Maintenance + Category P1: Edgewater-Huebner 138 (X-38) plus outage of 20th Street-Erdman 138 (X-64)
- Prior Maintenance of Lodestar-Huebner 138 (X-38) plus outage of Edgewater-20th Street 138 (X-37)

While potential instability could be mitigated by radializing the system, the next worst contingency would result in consequential load loss of approximately 100-150 MW.

ATC performed sensitivity analysis to determine system impacts if the Edgewater generation remains online. The analysis of the sensitivity indicates that even when the unit remains online and operational, category P6 contingency limitations remain.

ATC's analysis confirms that the Sheboygan area is vulnerable to voltage instability. As the planning study area load increases, critical contingencies can lead to potential voltage degradation and loss of load of up to 230 MW. Potential voltage instability and extremely low voltages found in power flow simulations are verified by the VSAT simulations for certain contingencies.

Section 3 of the Planning Scoping Document (PSD) (**Appendix D, Exhibit 1)** elaborates on how this analysis was conducted.

2.2 Transmission Network Alternatives

Two system alternatives were evaluated to address the needs identified above.

2.2.1 Preferred Solution

The scope of the preferred Alternative #1 includes the following transmission line facilities:

- New Howards Grove - Erdman 138 kV line.

Substation facilities added or altered are as follows:

- Erdman Substation: Installation of 138 kV bus switch and 138kV line position.

- Howards Grove Substation: Expansion of 138 kV straight bus into a 4-position ring bus.

The Project Diagram, which is a one-line representation of the Project, can be found in the PSD (**Appendix D, Exhibit 1**).

2.2.2 Viable Alternatives Considered

Detailed discussion regarding each of the viable alternatives evaluated can be found in Section 4 of the PSD (**Appendix D, Exhibit 1)**. High-level descriptions are as follows:

- Alternative #1: New Howards Grove Substation to Erdman 138 kV line
- Alternative #2: New Plymouth Substation to Erdman 138 kV line

2.2.3 Discussion of Preferred Solution and Viable Alternatives Considered

In order to determine which of these alternatives was the preferred solution, ATC took the following factors into consideration: costs, reliability, voltage performance, and losses.

Two alternatives were evaluated to address the study area limitations. Both alternatives involve constructing new transmission lines with new ROW.

Each alternative performs identically for reliability in every category. However, Alternative #2 is more expensive.

As outlined in Sections 5.1.1 and 5.1.2 of the PSD (**Appendix D, Exhibit 1**), when reliability, voltage performance and cost are considered, Alternative #1 is the best alternative to address study area needs.

The total costs for both alternatives are listed in Table 2.2.3.1 below. These are total project costs in 2023 dollars.

Table 2.2.3.1 – System Alternative Cost Comparison

Total Cost in 2023 Dollars	Alternative #1	Alternative #2
	$21.6M	$26.4M

Section 4 of the PSD (**Appendix D, Exhibit 1**) includes detailed discussion of the system alternative evaluations. The preferred system alternative is discussed in Section 4.1 of the PSD (**Appendix D, Exhibit 1**).

2.3 Local Transmission, Distribution, and Distributed Resource Alternatives

2.3.1 Studied Alternatives

See Section 4.3 of the PSD (**Appendix D, Exhibit 1**) for a description of other options not selected.

2.3.2 Reasons for Rejecting Studied Alternatives

See Section 4.3 of the PSD (**Appendix D, Exhibit 1**) for a detailed discussion of why several other options were not selected. Furthermore, through discussion with Alliant Energy, it was determined that the load cannot be moved from existing locations without replacing these sources with new sources and new transmission lines.

2.4 Non-transmission Options

There are no non-transmission solutions that will eliminate all the Project needs. Generation re-dispatch is not a feasible option, as there is no generation re-dispatch that could address the identified needs.

During the process of developing the Project, ATC monitored the MISO Generation Interconnection Queue to evaluate whether there were any actively proposed generation alternatives that could be included in the reliability analysis for the Project study area. There are no generation projects in the MISO Generation Interconnection Queue that provide alternatives to the Project.

At the time of this study, the MISO queue indicated the potential for generation additions at the Butternut (J1171) and/or Holland (J1153) Substations. As these substations are near the study area, ATC performed sensitivity analysis to determine impacts if these proposed generation additions were to move forward.

The analysis of that sensitivity found that even with some replacement generation in the area, NERC Category P6, P7, and prior maintenance plus Category P1 limitations remain. Although some of the Edgewater generation being retired could be replaced, the chosen generation sites do nothing to improve the area limitations, mainly because the contingencies themselves isolate the rest of the system from the proposed new generation. Please refer to Section 3.4 of the PSD (**Appendix D, Exhibit 1**) for further information regarding this sensitivity.

Please refer to Appendix H of the PSD (**Appendix D, Exhibit 1**) for further information regarding non-transmission solutions.

2.4.1 Noncombustible Renewable Energy Resources

The minimum amount of noncombustible renewable energy generation ATC believes would be sufficient to provide comparable reliability benefits to the Project is more expensive than the Project.

2.4.2 Combustible Renewable Energy Resources

The minimum amount of combustible renewable energy generation ATC believes would be sufficient to provide comparable reliability benefits to the Project is more expensive than the Project.

2.4.3 Nonrenewable Combustible Energy Resources:

2.4.3.1 Natural Gas

The minimum amount of new natural gas-fueled generation ATC believes would be sufficient to provide comparable reliability benefits to the Project is more expensive than the Project.

2.4.3.2 Oil or coal with a sulphur content of less than 1%

The minimum amount of new oil- or coal-fueled generation ATC believes would be sufficient to provide comparable reliability benefits to the Project is more expensive than the Project.

2.4.3.3 All other carbon-based fuels

The minimum amount of new carbon-based-fueled generation ATC believes would be sufficient to provide comparable reliability benefits to the Project is more expensive than the Project.

2.5 No-build Options

ATC considered two "no-build" options when evaluating the need for the Project.

2.5.1 First No-Build Option

The first no-build option ATC considered was the Maintain Existing System option. This option would maintain the existing facilities as needed to comply with safety requirements.

Even if the transmission system remains the same as it is today and Edgewater #5 were to remain online, this is not a viable option because it does not address all the needs outlined in Section 2.1.

2.5.2 Second No-Build Option

The second no-build option ATC considered was the "Retirement of Edgewater #5 without Reinforcement" Option. ATC's analysis indicates that a new line into the Sheboygan area is needed in order to reliably serve customer load.

ATC analyzed the system should the Edgewater generation retire and no additional transmission reinforcements are constructed. As discussed in Section 3.2, **Appendix D, Exhibit 1**, the system experiences unacceptably low voltages and the potential for voltage instability. Thus, retirement of the Edgewater generation without reinforcement of the system is not a viable option.

2.6 Energy Conservation and Efficiency, and Load Response

2.6.1 Energy Conservation/Efficiency

The load forecasts provided by the Local Distribution Companies for the study area include the energy conservation and efficiency impacts they have accounted for in their resource planning.

2.6.2 Energy Efficiency Needed to Reduce Need

To address area needs outlined in Section 2.1 of the PSD and to provide flexibility to address area uncertainties, ATC is not aware of any energy efficiency program that would provide similar benefits to the Project.

Eliminating the future load growth for the study area would not eliminate the need for the Project. The need for the Project exists during peak and off-peak conditions, which indicates the need for a significant amount of existing load reduction in the area.

2.6.3 Feasibility of Achieving Energy Efficiency

ATC is not aware of any additional conservation, efficiency, or load response programs for this area that can achieve this load reduction.

2.7 Market Efficiency Projects

The need for the proposed Project is not based on market efficiency. Therefore, a market efficiency study was not performed.

2.8 Modeling Information

Data files containing power flow modeling information supporting the Project will be provided separately with a request for confidentiality. ATC used the PSS®E power flow models for its analyses, with TARA and PowerWorld as supplemental tools to benchmark the results. Appropriate *.pwb and other pertinent PowerWorld files will be provided.

2.9 Area Load Information

General area load forecast information, including discussion of the 0.3% annual growth rate, is contained in Appendix F of the PSD (**Appendix D, Exhibit 1**).

2.10 Regional Transmission Organization Information

ATC provides transmission service under the terms of the MISO Open Access Transmission and Energy Markets Tariff. The Project was approved in Appendix A in the Midwest Transmission Expansion Plan for 2020 (MTEP20).

3.0 MAGNETIC FIELDS

Electromagnetic fields (EMF) refer to the EMF that are associated with all electrical devices. For the lower frequencies associated with power lines, a discussion of EMF should be separated into electric fields and magnetic fields.

EMF arise from the flow of electricity, are dependent on the voltage and current carried by a transmission line and are measured in kilovolts per meter (kV/m) and milliGauss (mG), respectively. The intensity of the electric field is proportional to the voltage of the line, and the intensity of the magnetic field (MF) is proportional to the current flow through the line conductors. Transmission lines operate at a power frequency of 60 hertz (Hz) (cycles per second).

Current passing through any conductor produces a MF in the area surrounding the conductor. The MF decreases rapidly with increasing distance from the conductor. The MF associated with a transmission line is expressed in units of magnetic flux density, or mG.

Considerable research has been conducted throughout the past three decades to determine whether exposure to power-frequency (60 Hz) MFs cause biological responses and health effects. These epidemiological and toxicological studies have shown no statistically significant association between MF exposure and health risks.

Under ATC's direction, a MF study for the proposed new transmission lines was performed, and the study report is provided in **Appendix G**, **Exhibit 1**. The report documents MF calculations for the proposed transmission lines. The report provides the MF calculations for all of the proposed line configurations on the proposed Route Sections and was prepared following the guidance set forth in the Application Filing Requirements. Calculations were performed using the EPRI ENVIRO module of the EPRI EMF Workstation. All figures and tables referenced in **Sections 3.0** through **3.6** below are contained in appendices to the report.

MF measurements taken at the Howards Grove and Erdman substations are presented in **Appendix G, Exhibit 2**.

3.1 Magnetic Field Profiles

The configuration of the transmission lines within any route section may vary depending on the route chosen, the presence or absence of existing transmission and distribution facilities, and other constraints. The EMF Cross Section maps in **Appendix G, Exhibit 1** provide the location of each unique facility configuration and profile developed. The EMF cross reference table in **Appendix G, Exhibit 1** provides a cross reference identifying the corresponding EMF Cross Section and estimated MF data table for each location. The EMF Cross Section figures in **Appendix G, Exhibit 1** identify the existing (if any) configuration of transmission and distribution facilities and the final facility configurations at each location. The estimated MF data tables in **Appendix G, Exhibit 1** provide calculated MF profiles for each facility configuration.

3.2 Magnetic Field Scenario

The tables provided in the report follow the format and content of Table 1 of the Application Filing Requirements and provide the estimated MF levels at 80% and 100% of peak load for one and ten years post construction out to 300 feet from the proposed transmission line centerline. As applicable, the tables have been modified to account for estimated present MF levels for existing facilities.

3.3 Assumptions

The figures identifying the facility configuration along the Route Sections contain the following modeling assumptions: the conductor phase identification and phase angles; a structure design diagram identifying the dimensions of structure arms and conductor locations; the horizontal distance from the conductors to the structures; and the height of all conductors above ground at mid-span. Where underground electric lines exist, the distance below the ground surface is provided.

The figures also provide the estimated current levels for one year post construction and ten years post construction based on estimated in-service year of 2023. Pre-construction current levels for existing electric facilities are also shown on the figures where applicable.

3.4 Substations

Planned generation retirement of 400 MW at Edgewater will impact voltage stability in the Sheboygan, WI area and will be mitigated through the installation of a new 138 kV 1229/1600A (normal/two-hour emergency) transmission line between Howards Grove and Erdman substations. Equipment at each substation will be installed to accommodate, protect and monitor this new 138 kV line.

At Howards Grove Substation, a four (4) position ring bus substation expansion will be installed for the new line to Erdman and to accommodate one (1) line to Erdman, one (1) future 138kV line and one (1) transformer position. Two (2) breaker positions will be installed in this Project scope.

At Erdman Substation, two (2) dead-ends will be installed for the new Howards Grove line and a future bus tie breaker. One (1) breaker position will be installed for the Howards Grove line. Site security will be upgraded to include new security lighting, cameras and security cabinet. The lighting control will be integrated into the existing contactor box.

At Lodestar Substation, new cellular communications equipment will be installed and replace existing copperline communication.

At Forest Junction Substation, powerline carrier relaying will be replaced for the Howards Grove line.

The magnetic field readings associated with existing substations are provided in **Appendix G, Exhibit 2.**

4.0 PROJECT COSTS

4.1 Transmission Route and Substation Costs

The following table provides the total cost estimate of each proposed route and substation site combination. The dollars are based on the projected in-service year. To align with Commission guidance, ATC presents these costs as a +10%/-30% estimate. ATC will continue, however, to minimize ratepayer impact by seeking to limit cost wherever possible.

PROJECT COST CATEGORY	Preferred	Alternate
Transmission Line Work		
Material	$2,517,000	$2,847,000
Labor/Other	$15,602,000	$21,367,000
Transmission Lines Subtotal	**$18,119,000**	**$24,214,000**
Substations		
Material	$1,693,000	$1,693,000
Labor/Other	$4,675,000	$4,675,000
Substations Subtotal	**$6,368,000**	**$6,368,000**
Pre-certification Costs	$1,119,000	$1,119,000
TOTAL PROJECT COST*	**$25,606,000**	**$31,701,000**

*The estimated project costs above do not include AFUDC. ATC has received MTEP Appendix A approval from MISO for this project which allows for CWIP (Construction Work in Progress) in Rate Base treatment and no AFUDC costs.

5.0 ROUTE, SITE, AND CONSTRUCTION INFORMATION

5.1 Routing and Siting Factors

Transmission Line

To identify the proposed routes, ATC used a multi-stage process that involved consulting with the PSCW, the WDNR and WisDOT and following the transmission line siting priorities. The siting process generally consisted of:

1. Identifying potential route corridors between established end points meeting the routing priorities defined in Wis. Stat. § 1.12(6). These priorities are to be used consistent with economic and engineering considerations, reliability of the electric transmission system, and protection of the environment. The siting priorities include, in order of priority:
    a. Existing utility corridors.
    b. Highway and railroad corridors.
    c. Recreational trails to the extent the facilities may be constructed below ground and do not significantly impact environmentally sensitive areas.
    d. New corridors.
2. Possible transmission line routes are screened against several criteria, including those specified in Wis. Stat. § 196.491(3)(d), to determine the proposed route alternatives. To the extent practical, these criteria include, but are not limited to the following, which are not listed in order of priority, nor assigned weighted values:
    - Location of existing linear infrastructure;
    - Use of existing ROWs to minimize the need for additional facility ROW (corridor sharing);
    - Locations of cemeteries, schools, day care facilities, and hospitals;
    - County and state road expansion plans;
    - Community and landowner impacts;
    - Ability to minimize impacts to environmental and natural resource features, including wetlands, waterways, and woodlands;
    - Archeological, tribal, and historic resources;
    - Location of airports and airstrips;
    - Avoiding high-density residential areas;
    - Conformance with existing and proposed land use patterns;

- Design modifications or construction practices to overcome terrain or other physical challenges; and
- Maintaining compatibility with local agricultural practices.

These elements were evaluated for their presence in the Project area and their relative sensitivity to the construction, operation, and maintenance of a transmission line. These considerations were refined using collected data and information gathered from initial agency contacts.

3. Performing a multidisciplinary review and evaluation considering and balancing the quantitative as well as qualitative factors discussed above along with design, engineering, economic, and operational considerations, to identify the proposed routes.

Substation

Both the Howards Grove and Erdman substations are configured to accommodate a new line. The selected transmission line route will not dictate the scope or volume of work involved within the substation yards. The optimal transmission line route will coincide with the optimal substation layout. Please see **Appendix I, Exhibits 1 and 2** for the proposed substation site plans.

The Forest Junction and Lodestar substations are not impacted by route selection.

5.2 Changes to Existing Easements

ATC will be acquiring all new high voltage easements for this Project for both new ROW and where the Project ROW overlaps existing transmission line ROW. ATC reviewed the approximately 17 existing easements along the proposed routes and determined that the existing easements are not sufficient to accommodate the new Project transmission line facilities. Existing easements describe a centerline and limit the number of structures (for example, an easement may specify one structure and ATC needs to place two structures on the parcel). Existing easements also specify a 30-foot minimum line-to-ground clearance which does not meet preliminary design requirements.

The easement width required for the new Project transmission line facilities is typically 80 feet. The existing easements are 125 feet. ATC is seeking to overlap as much of these existing ROWs as possible. The Project's 80 foot ROW alignment does not follow the same centerline as described in the existing 125 foot wide easements.

At Project completion, ATC will evaluate whether existing easements will be retained or can be released based on the specific provisions in each easement.

5.3 Route Segments

ATC performed preliminary engineering to develop structure types and configurations suitable for each of the proposed routes and route sections.

The structures for all segments of the new Howards Grove to Erdman 138 kV line will be single-circuit, self-supporting tubular steel monopole structures and will have either a weathering steel finish or galvanized coating. Exceptions to single circuit structures exist near the Erdman Substation where two of the proposed structures will replace existing structures and support the new circuit as well as the circuit currently being supported by the structures being replaced. A third structure on the north side of the Erdman Substation will support the new circuit as well as two other lines as they exit the Erdman Substation and pass by the new structure. Tangent and small angle structures will predominantly be in a delta-configuration. Single-circuit 138 kV medium angle, large angle and dead-end structures will be in a vertical-configuration for the purpose of turning an angle in the route.

All structures for the proposed routes will be self-supporting. Based on a preliminary geotechnical evaluation (desktop review, assessing the soil and geologic conditions, and review of soil logs at Howards Grove Substation) two predominant foundation types are anticipated for the Project: direct-embedded steel and reinforced concrete drilled pier. The 138 kV tangent and light angle structures will be primarily supported by direct-embedded steel foundations. The single-circuit angle and dead-end structures will be primarily supported by reinforced, concrete drilled pier foundations.

The Project's new line will be designed for and energized at 138 kV operating voltages. ATC proposes the use of TP-477 kilo circular mils (kcmil) Aluminum Conductor Steel Reinforced (ACSR) (Hawk) conductors for each phase of the new line.

The new line will use one shield wire to help protect the phase conductors from lightning strikes. This shield wire will be one steel and aluminum stranded wire containing a 48-fiber optic bundle core (generally known as optical ground wire or OPGW). OPGW allows both lightning protection and a communication path between substations.

The conductors of the new line will primarily be supported by polymer insulators in a braced post configuration.

Four spans of new conductor will be required on an existing line entering the Erdman Substation, as that line will be supported by new structures added for the Project. The proposed conductor matches the existing conductor used for the line.

Distribution Impacts:

The Alternate Route is co-located along roads including the access road to Howards Grove Substation, County Road FF, County Road Y, and Dairlyland Drive. All of these roads have distribution parallel to them that will be affected by the proposed Project. Both the Preferred and Alternate routes will impact some distribution around the Erdman Substation. The following details the extent of the distribution impacted. Details of the distribution impacted and the

existing and proposed configurations of the parallel distribution can also be found in the EMF Report in **Appendix G**.

Alternate Route Segment A:

The first 0.22 miles exits the Howards Grove Substation and follows along the substation access road, with structures placed within the access road easement and transmission ROW overlapping on private land. Two parallel three phase underground distribution circuits will remain in place and become co-located within the proposed ROW.

The next 0.30 miles follows along the south side of County Road FF with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. One parallel three phase underground distribution circuit and one parallel three phase overhead distribution circuit exist. The proposal is to bury the overhead distribution, relocate the underground distribution outside of road ROW, and add a single phase distribution. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The next 1.32 miles also follows along the south side of County Road FF with structures placed outside of the road ROW on private land, with transmission ROW overlapping with the road. The existing parallel three phase overhead distribution circuit is currently on the north side of the road. The proposal is to relocate the overhead distribution to co-locate with the proposed ROW, bury it, and add a single phase buried circuit. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The next 0.67 miles follows along the north side of County Road FF with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. The existing distribution is one parallel three phase overhead distribution circuit. The proposed configuration is to bury the parallel three phase distribution circuit and move it out of road ROW. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The next 0.37 miles follows along the east side of County Road Y with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. The existing configuration is one parallel single phase overhead distribution circuit on the opposite side of the road. The proposal is to bury the single phase underground distribution circuit and move it across the road out of road ROW. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The last 0.37 miles of segment A along County Road Y does not have distribution.

Alternate Route Segment E:

The first 0.69 miles follows along the west side of Dairyland Drive with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. The existing configuration is one parallel three phase overhead distribution circuit inside road ROW

on the same side of the road. The proposal is to bury the three phase underground distribution circuit, move it out of road ROW, and add one parallel single phase underground distribution circuit. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The next 0.55 miles follows along the east side of Dairyland Drive with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. The existing configuration is one parallel three phase overhead distribution circuit on the opposite side of the road. The proposal is to bury the three phase distribution circuit and move it across the road and out of road ROW to co-locate with the transmission line. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The next 0.88 miles follows along the west side of Dairyland Drive with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. The existing configuration is one parallel three phase overhead distribution circuit inside road ROW on the same side of the road. The proposal is to bury the three phase underground distribution circuit, move it out of road ROW, and add one parallel single phase underground distribution circuit. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The next 0.34 miles follows along the west side of Dairyland Drive with structures placed outside of the road ROW on private land, and transmission ROW overlapping with the road. The existing configuration is one parallel three phase overhead distribution circuit on the opposite side of the road. The proposal is to bury the three phase distribution circuit, move it across the road and out of road ROW to co-locate with the transmission line, and add one single phase circuit. All distribution will be co-located within the proposed ROW with a separate easement for the distribution owner.

The last 0.39 miles of segment E along Green Valley Lane and across I-43 does not have distribution.

<u>Preferred and Alternate Routes Segment F:</u>

In front of the Erdman Substation there is crossing distribution along the south side of County Road J that will be buried to the extent of the proposed ROW. Additionally, single phase distribution along the west lot line of the substation will be buried where it is parallel to the new line for 0.6 miles.

Table 5.3.1-1 – Route Characteristics

Segment	Structure Type	Transmission Configuration	Transmission Conductor	Span Length	Affected Existing Distribution	ROW Sharing
A	Steel Monopole	Single Circuit	TP-477 ACSR	680 Avg	Yes, See 5.3 Text	Erdman Substation Access Road, County Road FF, County Road Y
B	Steel Monopole	Single Circuit	TP-477 ACSR	655 Avg	None	Existing Easement
C	Steel Monopole	Single Circuit	TP-477 ACSR	770 Avg	None	Existing Easement
D	Steel Monopole	Single Circuit	TP-477 ACSR	680 Avg	None	Interstate 43
E	Steel Monopole	Single Circuit	TP-477 ACSR	680 Avg	Yes, See 5.3 Text	Dairyland Drive, Green Valley Ln
F	Steel Monopole	Single Circuit	TP-477 ACSR	400 Avg	Yes, See 5.3 Text	Interstate 43

5.4 Impact Tables

The following tables are included in **Appendix B**.

Table 1 – General Route Impacts

Table 2 – Land Cover

Table 3 – Federal, State, Local, and Tribal Lands

Table 4 – Distances of Schools, Daycare Centers, and Hospitals from ROW Centerline

Table 5 – Distances of Residential Buildings from ROW Centerline

Table 7 – Route Impact Summary

In general, the information contained in **Appendix B**, **Tables 1** through **5** and **Table 7** was developed from a combination of sources including available reference data, aerial photography and field observations along the Project route. These sources were utilized to measure and calculate impacts using GIS software.

The reference data includes municipality boundaries, park and recreation areas, and scenic/rustic roads that was obtained in 2020 from LTSB Open Data and WisDOT data sources.

Aerial imagery sources include the WDNR GIS Server (Accessed 2021), Sheboygan County (Accessed 2021), National Agricultural Imagery Program (Accessed 2021), ESRI World Imagery and World Imagery (Clarity) basemaps, and Google Earth, Maps, and Street View (sourced from ©2021 Google and its data suppliers). As a supplement, aerial imagery from several recent dates were also viewed in Pictometry, a licensed imagery-based system that provides high resolution, two- or four-way oblique views of the ground surface.

The WDNR GIS server (Accessed 2021) was accessed to obtain information for county tax parcel data, Managed Forest Law (MFL) and Forest Crop Law (FCL) Points, Conservation Easements, OERW Waterways, Wisconsin Wetland Inventory (WWI), 24k Hydro Waterways and Waterbodies and Wiscland 2.0 Land Cover.

5.4.1 Table 1 – General Route Impacts

The general ROW requirements and ROW sharing characteristics for the Project are presented in **Appendix B, Table 1**. The Project was broken into six segments to facilitate analysis. The Preferred Route is approximately 6.9 miles in length and contains Segments B and D. The Alternate Route is approximately 7.9 miles in length and contains Segments A, C, and E. Segment F is Common to both the Preferred and Alternate Routes. GIS software was used to determine segment lengths and the new and shared ROW widths and areas for this table.

The type and extent of existing ROW was determined from the following sources in conjunction with aerial photography and field observations:

- Utility Easement: Existing ATC owned utility easement widths were determined from review of easement agreements.
- Road: Within the Project area, parcel data did not define the extent of the local road ROW. The ROW width was estimated based on aerial photograph interpretation (e.g., fence lines, differences in vegetation) and immediately adjacent parcel data.

Both the Preferred and Alternate Routes were designed to follow existing utility easements and transportation corridors to the extent practicable. A total of 27% of the Preferred Route exists within shared ROW, 43% of the Alternate Route exists within shared ROW, and 32% of the Common Route exists within shared ROW.

5.4.2 Table 2 – Land Cover

Land cover data was obtained in 2021 and was reviewed along the Project Area. Additional land cover analysis was completed by review of aerial photography and field observations. Field work along the two proposed routes was completed May 3 to May 7, 2021 and included aquatic resource identification and direct land cover observation. Land cover was digitized using GIS software to quantify the area by category within the ROW of the Preferred and Alternate Routes. The area of each identified land use was quantified using GIS software and the resulting acreages were summed by land cover category by segment for both proposed routes.

The results of this review are presented in **Appendix B, Table 2**. Land cover identified within the Project area consisted of Crop Land, Grassland, Forested Upland, Forested Wetland, Non-Forested Wetland, and Developed/Urban categories. A summary of land cover analysis results is provided in the table below.

Table 5.4.2-1 – Summary Land Cover Analysis Results

Land Cover	% of Preferred Route	% of Alternate Route	% Common Route
Crop Land	42%	36%	0%
Specialty Agriculture	0%	0%	0%
Grassland	24%	34%	57%
Forested Upland	11%	6%	2%
Forested Wetland	4%	2%	0%
Non-Forested Wetland	17%	12%	20%
Developed/Urban	3%	11%	21%

5.4.3 Table 3 – Federal, State, Local and Tribal

County parcel data obtained in 2021 was used to identify federal, state, local, and tribal lands along the Project ROW. Road ROW was not included in this evaluation. This information is provided in **Appendix B, Table 3**.

No tribal lands, American Indian reservations, or federally-owned (or managed) lands are present along the Project ROW.

5.4.4 Table 4 – Distances of Schools, Daycare Centers and Hospitals from ROW Centerline

The presence of sensitive receptors (schools, daycare centers, nursing homes, and hospitals) within 300 feet of the Project centerline were determined using GIS measurements and field verified to the extent practicable. The Preferred Route includes one school property within the 101-150 feet range of the proposed centerline; however, this area is used as an athletic field and the nearest building on this property is 475 feet from the proposed centerline. There are no schools within 300 feet of the Alternate or Common Routes. The Common Route includes one daycare center within the 26-50 feet range of the proposed centerline. There are no daycare centers within 300 feet of the Preferred or Alternate Routes. There are no hospitals within 300 feet of the Preferred, Alternate, or Common Routes. This information is provided in **Appendix B, Table 4**.

The following databases were used to identify these facilities:

- Locations of licensed family and group childcare centers were provided by the Wisconsin Department of Children and Families (downloaded on May 4, 2021, current as of May 4, 2021);
- Public and private school locations were provided by the Wisconsin Department of Public Instruction (downloaded on May 4, 2021, current as of February 10, 2021);
- Hospital locations were provided by the Wisconsin Department of Health Services (downloaded on May 4, 2021, current as of December 16, 2020); and
- Nursing Home locations were provided by the Wisconsin Department of Health Services (downloaded on May 4, 2021, current as of December 16, 2020).

5.4.5 Table 5 – Distances of Residential Buildings from ROW Centerline

Residential building types (homes and apartments) and the distance of these buildings from the ROW centerline were determined using GIS measurements. This information is provided in **Appendix B, Table 5**. Residential buildings were tallied according to five distance categories from the ROW centerline: 0–25 feet, 26–50 feet, 51–100 feet, 101–150 feet, and 151–300 feet.

The Preferred Route includes one home within 26 to 50 feet, one home within 51-100 feet, four homes within 101-150 feet, and four homes within 151-300 feet for a total of ten homes within 300 feet of the ROW centerline. There are no apartments within 300 feet of the Preferred Route.

The Alternate Route includes one home within 26 to 50 feet, 11 homes within 51-100 feet, eight homes within 101-150 feet, and 16 homes within 151-300 feet for a total of 36 homes within 300 feet of the ROW centerline. There are no apartments within 300 feet of the Alternate Route.

The Common Route includes one home within 51-100 feet, two homes within 101-150 feet, and three homes within 151-300 feet for a total of six homes within 300 feet of the ROW centerline. There are two apartment buildings with a total of 79 units within 300 feet of the Common Route.

The Project will be designed and constructed to comply with state and federal electrical codes.

5.4.6 Table 7 – Route Impact Summary

This table presents a summary of impacts along the Preferred, Alternate, and Common Routes including total route length and ROW acreage; upland and wetland acreage within the Project ROW; and residential buildings within 300 feet of the ROW centerline. This information is provided in **Appendix B, Table 7**. No new analyses were performed; the data is a summary of the information in Tables 1-5.

5.5 Construction Impacts

5.5.1 Construction Sequence

Construction of an overhead transmission line requires several different activities at any given location. Section 5.5.2 describes the major construction activities and approximate sequence, along with the anticipated impacts associated with each activity.

5.5.2 Construction Impacts by Phase

Surveying and staking of ROW

This activity will have minimal impact, typically completed by a two-person crew travelling by foot, ATV, or pick-up truck.

Clearing of ROW

To facilitate construction equipment access and ensure safe clearances between vegetation and the transmission line, all vegetation will be cleared for the full width of the ROW. Vegetation will be cut at or slightly above the ground surface using mechanized mowers, harvesters, or by hand. Root stocks will be left in place, except in areas where stump removal is necessary to facilitate the movement of construction vehicles, or in maintained lawn areas. Where permission of the landowner has been obtained, stumps of tall-growing species will be treated with an herbicide to discourage re-growth.

Temporary staging of poles and other materials along ROW

This activity will have minimal impact. Trucks, loaders, and cranes are needed to unload poles and other materials near each work location.

Installation of erosion control Best Management Practices (BMPs)

BMPs will be location specific and installed prior to all anticipated ground disturbance. Where unexpected ground disturbance occurs, BMPs will be installed immediately after the disturbance occurs.

Foundation installation and/or excavation for transmission structures

Excavation or drilling is required for all structures whether they are direct- embedded, reinforced concrete foundations, or micropiles.

In general, the excavated holes for each type of foundation will range from 4 to 10 feet in diameter and may be 15 to 35 feet in depth, or greater depending on soil conditions. The method of installation, diameter, and depth of the foundation will vary depending on the soil capability and structure loadings.

- For direct-embedded poles (no concrete foundation required), a hole is excavated to the appropriate depth. The base of the structure is placed into the excavated hole, and the area around the pole is backfilled with clean granular fill.
- For structures requiring a reinforced concrete foundation, a hole is drilled or excavated, and a rebar cage and anchor bolts are placed into the excavation. The excavation is then filled with concrete to a point where the rebar cage and anchor bolts are covered leaving a typical one to two foot reveal of the foundation above grade with exposed threaded anchor bolts. The complete caisson is allowed to cure.

Micropile foundations (or micropiles) are similar in form and installation to drilled-pier foundations, except that micropiles are installed in groups, are much smaller in diameter (typically between 5-15 inches), and can be installed at depths of up to 200 feet using rotary drilling rigs. Adjustment of micropile diameter, depth, and number can provide support for very large loading capacities.

Excess soils from excavations may be spread in the ROW in upland areas and stabilized or hauled to an offsite disposal location, depending on the setting and the property owner's requirements.

In areas where groundwater seeps into the excavation, or where water is needed to hold the hole during drilling, it may be necessary to dewater the excavation. Depending on site conditions, the water may be de-silted and discharged to an upland area where it is allowed to re-infiltrate, or removed from site via a tank truck.

Typical equipment for this phase of construction includes pick-up trucks, dump trucks, back hoes, drill rigs, cranes, vacuum trucks, tanker trucks and concrete trucks.

Structure setting

After the direct-embed base is set or the caisson is cured, the remainder of the steel pole structure (or sections) is mounted to the base. Typical equipment for this phase of construction are cranes, bucket trucks, pick-up trucks and dump trucks. Please see **Appendix C, Exhibit 1** for typical structure drawings.

Wire stringing and clipping

After all the structures within a wire pull segment are set, the wires are pulled and clipped into place. This requires access to each structure with either a bucket truck or helicopter. Wire set

up areas containing reel trailers, wire pullers, and related equipment are located at each end of the wire pull.

Cleanup and Restoration of ROW

Upon completion of construction, cleanup and site restoration is completed. This includes removing construction mats, Temporary Clear Span Bridges (TCSB), and other material or debris from the ROW, and any necessary seedbed preparation and seeding. Typical equipment for these activities includes mat trucks, bobcats, pickup trucks and other light duty vehicles.

Transmission line construction will be confined to the ROW, the access routes, and the laydown and staging areas. ATC will utilize existing roads or ROW and arranged access locations where roadways are not present. Most disturbances will occur in the area immediately surrounding transmission line structures. In areas where access cannot be gained from existing roads, some disturbance from vehicular traffic may also occur. Disturbance at these areas may include clearing of vegetative cover, soil compaction, vehicular tracking, and some topsoil disturbance.

5.5.3 Unique Construction Methods

Unique construction methods are not anticipated for this Project.

5.5.4 Substation Construction Impacts

Erdman, Forest Junction and Lodestar facilities improvements are proposed to be primarily located within the existing property and within the fenced areas. Howards Grove improvements are proposed to be within the existing property but will expand the fenced area to accommodate the ring bus addition.

The Howards Grove and Erdman Substation improvements include installation of various outdoor substation equipment including, but not limited to, circuit breakers, switches, and voltage transformers. Work within the control house includes, but is not limited to, relay panel changes, system protection and IT improvements.

Forest Junction Substation will include facilities improvements within the control house for system protection needs. Lodestar Substation will include facilities improvements within the control house for IT needs.

ATC's construction at the Howards Grove and Erdman Substations will consist of drilled pier foundations ranging in size from two to eight feet in diameter and four to forty feet deep. The foundations will be installed to support transmission line dead-end structures, static masts, bus, and equipment support structures. Slabs-on-grade eight feet by eight feet and up to three feet thick will be used for 138 kV circuit breakers. Conduit for control and communication cables and grounding conductor will be installed prior to the placement of the final layer of crushed rock surfacing.

5.6 Staging Areas and Temporary Work Space

ATC has identified five construction laydown areas for the Project. A site map of the laydown areas is provided in **Appendix A, Figure 6**. If additional staging areas or temporary workspaces are required, ATC will notify the Commission of these new construction locations and will submit the necessary information to the PSCW prior to establishing any such areas in accordance with Wis. Admin. Code § PSC 111.71 or 112.073.

Locations have been selected based on their proximity to both the Preferred and Alternate routes. Preference was given to locations where either existing asphalt parking lots were present, or where active/inactive quarries and gravel pits had the necessary capacity to store equipment and personnel during various construction phases. Additionally, four of these sites were selected with the intention that no further expansion or ground disturbances would be needed at those locations in order to meet the Project's requirements. The only option requiring site prep is the area that will be used for the expansion of the Howards Grove Substation.

These locations were included within the impact summary tables presented in Section 5.4 and **Appendix B, Tables 1-5, 7**.

5.7 Off ROW Access Roads

Based on preliminary desktop and field reviews of the Project corridor, ATC has identified locations where access from outside the Project ROW is proposed. These locations can be seen on **Appendix A, Figure 3**. These off-ROW access routes are preferable to access sensitive and difficult to access parts of the Project corridor in the most efficient manner. ATC intends to access the remainder of the Project along the Project ROW or directly from public roads that intersect or parallel the Project ROW, unless the construction contractor can arrange for alternative access that minimizes cost, environmental impacts, or landowner impacts. If additional access paths are identified, ATC will complete an environmental review of these paths and submit the necessary information to the PSCW prior to establishing any such areas in accordance with Wis. Admin. Code § PSC 112.073.

Once construction is complete, the off-ROW access paths utilized for the Project will be restored to pre-construction conditions. No permanent improvements to off-ROW access are proposed at this time.

5.7.1 Access Lengths

The length of the proposed off-ROW access along the Preferred Route includes 3,505 feet across agricultural lands, 1,110 feet across grassland, 794 feet across non-forested wetland, 3,524 feet across urban/developed lands, 0 feet across forested wetlands, and 0 feet across upland forests.

The length of the proposed off-ROW access along the Alternate Route includes 86 feet across agricultural lands, 165 feet across grassland, 46 feet across non-forested wetland, 275 feet across urban/developed lands, 0 feet across forested wetlands, and 0 feet across upland forests.

The length of the proposed off-ROW access along the Common Route includes 0 feet across agricultural lands, 667 feet across grassland, 54 feet across non-forested wetland, 1,262 feet across urban/developed lands, 0 feet across forested wetlands, and 42 feet across upland forests.

5.7.2 Purpose

The proposed off-ROW access is necessary to access around challenging terrain to minimize and avoid grading, access around wetlands and waterways to minimize temporary impacts and use of TCSBs, and for avoidance of cultural resources.

5.7.3 Land Cover

Land cover along off-ROW access was calculated by applying a 20-foot buffer to off-ROW access paths (creating a 40-foot corridor width) and using aerial imagery analysis to determine land cover along each access path. While the 20-foot buffer may overlap with forested land cover, the access path itself will not occur within forested lands and will not require off-ROW clearing of forested areas.

Land cover along the proposed off-ROW access along the Preferred Route includes agricultural lands (3.47acres), grassland (1.68 acres), non-forested wetland (0.52 acres), urban/developed lands (2.19 acres), forested wetlands (0 acres), and upland forest (0.33 acres).

Land cover along the proposed off-ROW access along the Alternate Route includes agricultural lands (0.07 acres), grassland (0.18 acres), non-forested wetland (0.04 acres), urban/developed lands (0.27 acres), forested wetlands (0 acres), and upland forest (0 acres).

Land cover along the proposed off-ROW access along the Common Route includes agricultural lands (0 acres), grassland (0.63 acres), non-forested wetland (0.06acres), urban/developed lands (1.21 acres), forested wetlands (0 acres), and upland forest (0.05 acres).

5.8 Substation Site Information

5.8.1 Description, Diagrams, Graphics

At Erdman Substation, the existing yard has adequate space to accommodate equipment associated with receiving the new 138 kV line. The site is graded with aggregate material covering the surface. Any new equipment at the site will not exceed a height of 65 feet from the top of concrete. There will be no changes to access roads, detention ponds or other site-related scope for this Project. See **Appendix J, Exhibits 1, 2 and 3**.

At Howards Grove Substation, the yard will be expanded approximately 100 feet east to accommodate equipment associated with receiving the new 138 kV line. The site was previously graded, and requires additional aggregate material to cover what is now undeveloped utility-owned land. Equipment height will not exceed 65 feet from top of concrete. No changes to the access roads (expansion will cover part of the existing access roads), detention ponds or other site-related scope is part of this Project. See **Appendix J, Exhibits 4, 5, 6 and 7**.

Topography, land cover, and land use will not be adversely affected as a result of the proposed changes.

No site work will be performed at the Forest Junction or Lodestar substations.

5.8.2 Associated Transmission and Distribution Line Work

There are no underground or overhead distribution requirements within the substations at Howards Grove, Erdman, Forest Junction or Lodestar.

6.0 NATURAL RESOURCE IMPACTS

6.1 Forested Land

Forested areas along the Preferred and Alternate Routes were quantified as part of the impact analysis (Section 5.4) and the resulting acreages are provided in the Land Cover table **(Appendix B, Table 2).** Forested lands are defined as areas where mature trees are present forming mostly closed stands (>20% canopy cover and trees with diameter at breast height (DBH) of six inches or more). Narrow tree lines (e.g., wooded fence rows) or windbreaks are not included in forested cover.

The following tree size classification system was used:

- Saplings refer to live trees from one to five inches DBH;
- Pole timber ranges from five to nine inches DBH (softwoods) and from five to eleven inches DBH (hardwoods);
- Saw timber is greater than nine inches DBH (softwoods) and greater than eleven inches DBH (hardwoods).

6.1.1 Impacted Woodlands

This Project will impact forested lands along both the Preferred and Alternate Routes. Impacts will occur as a result of clearing for the new ROW with a necessary clearing width of 80 feet. The ROW will then be maintained in perpetuity via routine vegetation management practices to ensure that the area remains free of incompatible woody vegetation. No woodland impacts are planned outside of the ROW for either proposed route option. No woodland impacts are planned for off ROW access routes.

The establishment of a hazard tree buffer along both the Preferred and Alternate Routes will also remove trees as a part of the Project. The hazard tree buffer includes a total width of 300 feet. Hazard trees are defined as a tree that has been assessed and found to be likely to fail and cause an unacceptable degree of injury, damage, or disruption. Hazard trees pose a high or extreme risk. Hazard tree removal is sparse and selective in nature and does not result in a loss of forested land. Due to limited areas of forested land along the Preferred and Alternate Routes, removal of hazard trees has not been included within this assessment as the impact is negligible.

The Preferred Route contains approximately 8.48 acres of woodlands within the limits of the proposed ROW. Dominant tree species generally consist of sugar maple (*Acer saccharum),* American basswood *(Tilia americana),* white pine (*Pinus strobus),* and green ash (*Fraxinus pennsylvanica*). Other species present consist of oaks, beech, spruce, maples and elms. These species comprise a range of size classifications as determined during field surveys. These woodlands are within private property of individual landowners.

The Alternate Route contains approximately 5.25 acres of woodlands within the limits of the proposed ROW. Dominant tree species generally consist of green ash (*Fraxinus pennsylvanica*), white pine, *(Pinus strobus*), red pine (*Pinus resinosa),* and white spruce (*Picea glauca).* Other species present include basswoods, elms, willows, cedars, maples, and hemlocks. These species also include a range of size classifications as determined during field surveys. These woodlands are within private property of individual landowners.

The Common Route contains approximately 0.16 acres of woodlands within the limits of the proposed ROW. Dominant tree species generally consist of green ash (*Fraxinus pennsylvanica*) and boxelder (*Acer negundo*). These woodlands exist within private property of individual landowners and include primarily sapling and pole timber size trees.

The final selection of access routes and engineering design will attempt to minimize impacts to forested lands.

A summary of the forest types, number of acres to be cleared, average size of trees, ownership, and use is shown by segment in **Table 6.1.1-1,** below.

Table 6.1.1-1 Tree Clearing Summary

Preferred Route				
Segment	**Type of Woods**	**Acres to clear**	**Dominant Species**	**Average Size Class**
B	Forested Wetland	1.12	Sugar Maple, Red Oak, American Elm, American Beech, Basswood, Green Ash, Boxelder, Willow sp., White Pine, White Spruce	Saw Timber
	Upland Forest	3.48		
D	Forested Wetland	1.03	Green Ash, Oak Spp., Basswood, Hawthorn	Pole Timber
	Upland Forest	2.85		
Alternate Route				
A	Forested Wetland	0.96	Pine spp., Red Cedar, White Spruce, Eastern Hemlock, White Oak, Willow sp., American Elm,	Pole Timber

	Upland Forest	1.00	American Beech, Green Ash, Boxelder, Maple spp.	
E	Forested Wetland	0.27	White Pine, Ash Spp., Quaking Aspen, Boxelder	Pole Timber
	Upland Forest	3.02		
Common Route				
F	Forested Wetland	0.00	Green Ash, Boxelder	Pole Timber
	Upland Forest	0.16		

6.1.2 Managed Forest Law and Forest Crop Law

ATC obtained information from the WDNR identifying quarter-quarter (40-acre) sections in which all or some portion of the land is enrolled in the MFL or the FCL programs. MFL properties exist along the Preferred and Alternate Routes and are summarized below in **Table 6.1.2-1**. No FCL enrolled properties were identified within the Project area.

Table 6.1.2-1 MFL Summary Table

Type	Segment	Order Number	Approximate Forested Clearing (acres)	Order Expiration Date	Location
MFL	B	60-029-1999	0.0003	12/31/2023	T16-R22E-S24, Part of the SE of the NE
MFL	B	60-001-2009	0.77	12/31/2058	T16-R23E-S19, Within the SE of the NW
MFL	A	60-009-2001	0.90	12/31/2025	T16-R23E-S20, Part of the SW of the NW

The full extent to which program participation may be affected cannot be determined based on the information available to ATC. If the proposed easement area does not encumber the

forested areas on the parcel, there would be no impact to the program. During the easement negotiation process, conflicts between the terms and conditions of the MFL Program Agreement and ATC's proposed easement, if any, will be addressed. If any landowner would be unable to continue in the program, or if the level of participation is impacted, ATC will compensate the landowner as appropriate. Due to conflicts between transmission line easements and the obligations of the landowner under the terms and conditions of this program, the land in the easement area may have to be removed from the MFL.

6.1.3 Mitigating Minimizing Construction Impacts In and Around Forested Lands

The Preferred and Alternate Routes will both require the clearing of woody vegetation within the proposed ROW. Tall-growing woody vegetation that may interfere with safe construction and safe and reliable operation of the transmission line will not be allowed to persist and will be controlled. Woody vegetation may be chipped and scattered over the ROW in non-agricultural upland areas. Chipping will only occur in wetlands or floodplains such that chipped material is thinly scattered in a manner that does not impede revegetation. Section 6.6 (Invasive Species) describes tree clearing timing restrictions and slash management procedures to prevent the spread of invasive species and disease-causing organisms.

Woody vegetation will be removed periodically through routine vegetation management activities through the operational life of the facility.

6.2 Grasslands

6.2.1 Grasslands Impacted by the Project

Grasslands are classified as any undeveloped landscape dominated by herbaceous (non-woody) vegetation, including prairie, pasture, old field, etc. Grassland areas along the Preferred and Alternate Routes were quantified as part of the impact analysis (Section 5.4) and the resulting acreages are provided in the Land Cover table in **Appendix B, Table 2**. Grasslands identified along the Preferred and Alternate Routes consist primarily of open fields (dominated by herbaceous vegetation) that are not in agricultural production and includes upland road ROW. The proposed ROW along the Preferred Route intersects approximately 14.18 acres of grassland, the Alternate Route intersects approximately 23.52 acres of grassland, and the Common Route intersects approximately 4.04 acres of grassland. Table 6.2.1-1 below summarizes grasslands within each route segment.

Table 6.2.1-1 Grassland Impacts Summary

Preferred Route			
Route Segment	**Type**	**Dominant Species**	**Grassland Acreage**

B	Undeveloped Grassland	Reed Canary Grass, Kentucky Bluegrass, Brome Grass, Dandelion, White Clover	1.90
D	Undeveloped Grassland	Reed Canary Grass, Kentucky Bluegrass, Brome Grass, Canada Goldenrod, Queen Anne's Lace, Dandelion	12.28
Alternate Route			
A	Undeveloped Grassland	Reed Canary Grass, Kentucky Bluegrass, Brome Grass, Barnyard Grass, Dandelion	9.20
C	Undeveloped Grassland	Reed Canary Grass, Kentucky Bluegrass, Brome Grass, Dandelion, Queen Anne's Lace, White Clover	0.93
E	Undeveloped Grassland	Reed Canary Grass, Kentucky Bluegrass, Brome Grass, Canada Goldenrod, Queen Anne's Lace, Dandelion	13.39
Common Route			
F	Undeveloped Grassland	Reed Canary Grass, Kentucky Bluegrass, Brome Grass, Queen Anne's Lace, Dandelion	4.04

6.2.2 Mitigating and Minimizing Construction Impacts In and Around Grasslands

Impacts to grasslands from construction activities will be mitigated and minimized throughout Project implementation. This may be achieved through carefully planned access routes, avoidance when possible, limited access widths, and the use of construction matting to minimize the potential for ground disturbance. BMPs to prevent the introduction and spread of invasive species will be followed and are detailed in Section 6.6. BMPs will also help further minimize construction impacts to grasslands.

6.3 Wetlands (see Section 8.0 for additional details)

ATC's environmental consultant, Cardno, completed field surveys to identify aquatic resources within the Project area for both the Preferred and Alternate Routes from May 3 to May 7, 2021. Field survey was conducted within the public ROW and where access was granted by existing utility easements. Where access permissions were not granted, wetlands were investigated both from adjacent accessible areas and through additional review of desktop resources in order to identify all wetland areas contained within the proposed ROW for both Route options.

These surveys were completed in the field using a combination of both wetland delineation and determination methods. Where formal delineation was conducted, surveys were completed using the criteria and methods outlined in: the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE 1987); the Interim Regional Supplement to the Corps of Engineers 1987 Wetland Delineation Manual: Northcentral/Northeast Region (2008); subsequent guidance documents (USACE 1991, 1992); the Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers (USACE 1996); the Guidance for Offsite Hydrology/Wetland Determinations (MN BWSR 2016); and the Basic Guide to Wisconsin's Wetlands and their Boundaries (Wisconsin Department of Administration Coastal Management Program 1995). Additional detail regarding field survey methodology is provided in **Section 8.3** and in the Wetland Delineation Report (**Appendix F, Exhibit 2**).

Wetland areas along the Preferred and Alternate Routes were quantified as part of the impact analysis (Section 5.4) and the resulting acreages are provided in the Land Cover table in **Appendix B, Table 2**. In general, the Preferred Route contains approximately 12.51 acres of wetland, the Alternate Route contains approximately 9.48 acres of wetland, and the Common Route contains 1.38 acres of wetland. Additional detail on the wetlands identified along the Preferred, Alternate, and Common Routes are provided in the Wetland Delineation Report (**Appendix F, Exhibit 2**). Proposed wetland impacts are detailed in the wetland impact tables (**Appendix F, Tables 1 and 2**) and are depicted on **Appendix A, Figure 3A**.

6.3.1 Proposed Wetland Crossings

Table 6.3.1-1 below summarizes the total number of wetlands crossed by each of the Preferred, Alternate and Common Routes. Not all wetlands crossed by the ROW will be impacted as preliminary designs and construction plans have been developed to avoid and minimize impacts to wetlands to the extent practicable. A detailed inventory of wetland crossings is provided in the WDNR Waterway/Wetland Environmental Inventory table (**Appendix F, Table 2**) and are illustrated on the Environmental Features and Access Plan map set (**Appendix A, Figure 3A**). Each separate wetland crossing was counted individually. Thus, any given wetland unit may be crossed more than once, depending on its configuration.

Table 6.3.1-1 Wetland Crossings

Number of Wetlands Crossed		
Preferred Route	**Alternate Route**	**Common Route**
32	59	7

6.3.2 Structures within Wetlands

Conceptual structure locations were developed to evaluate the potential impacts to wetlands and to help develop preliminary construction access plans. Wetland impacts will be re-examined during the detailed design phase with the objective of reducing impacts to the extent practicable. **Appendix F, Table 1** summarizes all structures proposed within wetlands as they are currently designed. The Preferred Route has nine structures proposed within wetland resulting in 132 square feet (0.003 acres) of permanent fill. The Alternate Route has seven structures proposed within wetland resulting in 90 square feet (0.002 acres) of permanent fill. The Common Route has one structure proposed within wetland resulting in 37 square feet (<0.001 acres) of permanent fill.

To conservatively estimate wetland impacts by this Project, impact calculations have assumed that new structures will be installed as currently designed. However, the final design of this Project will attempt to locate new structures outside of wetlands or at the edge of wetlands when possible.

6.3.3 Mitigating Construction Impacts In and Near Wetlands

The Project will strive to avoid and/or minimize wetland impacts to the extent practicable throughout the detailed design and construction planning phases. These efforts may include, but are not limited to, spotting structures outside of wetland areas or near their edges, avoiding access through wetlands, using construction matting or low-ground pressure equipment, and/or accessing during dry or frozen conditions. Temporarily impacted wetlands will be restored to pre-existing conditions through re-vegetation and restoration plans, discussed in Section 6.9.

To mitigate the spread of invasive species in wetlands, appropriate protection measures will be implemented. These measures, detailed in Section 6.6, may include: avoidance of infested areas, removal or control of small populations of invasive plants, scheduling of construction activities during the invasive plant's dormant period, or cleaning of equipment prior to accessing non-infested areas.

6.3.4 "Significant" or "High-Quality" Wetlands

The wetland communities identified during field surveys (Section 8.3) were evaluated to determine which wetlands can be considered Areas of Special Natural Resource Interest (ASNRI) as described in Wis. Admin. Code § NR 1.05. The field identified wetlands were also reviewed to determine if any of the following wetland community types were present: Great Lakes ridge and swale complexes, interdunal wetlands, coastal plain marshes, emergent marshes containing wild rice, southern sphagnum bogs, boreal rich fens, or calcareous fens. None of these significant or high-quality wetland community types were identified within the Project area.

<u>Preferred Route</u>

The majority of wetlands identified along the Preferred Route are low quality shallow marsh communities dominated by hybrid cattail (*Typha X glauca,* OBL) and degraded fresh wet meadow communities dominated by reed canary grass *(Phalaris arundinacea,* FACW). Many of these wetlands have formed as a direct result of the historic disruption of natural drainage features by farming practices and road construction activities. Vegetation within these lower quality wetlands consists primarily of fast growing adventitious species, such as reed canary grass *(Phalaris arundinacea,* FACW), hybrid cattail (*Typha* X *glauca*, OBL), large barnyard grass *(Echinochloa crus-galli*, FAC), and curly dock (*Rumex cripus*, FAC).

Several wetlands along the route consisted of higher quality forested wetlands with dominant tree species that include green ash (*Fraxinus pennsylvanica*, FACW), crack willow (*Salix X fragilis*, FAC), American elm (*Ulmus americana*, FACW), sugar maple (*Acer saccharum*, FACU), and cottonwood (*Populus deltoides*, FAC). Dominant shrub species include gray dogwood (*Cornus racemosa*, FAC), green ash (*Fraxinus pennsylvanica*, FACW), chokecherry (*Prunus virginiana*, FACU), and American beech (*Fagus grandifolia*, FACU). Dominant herbaceous species include green ash (*Fraxinus pennsylvanica*, FACW), reed canary grass (*Phalaris arundinacea,* FACW), Virginia waterleaf (Hydrophyllum virginianum, FAC), marsh marigold (Caltha palustris, OBL), and spring cress (Cardamine bulbosa, OBL). Specific characteristics of wetlands are summarized in the Wetland Delineation Report (**Appendix F, Exhibit 2**).

Alternate Route

Similarly, wetlands along the Alternate Route are primarily classified as low-quality wet meadow communities. Historic disruption of natural drainage has developed many of these wetland types. Vegetation within these wetlands consists primarily of fast growing adventitious species, such as reed canary grass *(Phalaris arundinacea,* FACW) and hybrid cattail (*Typha X glauca,* OBL).

Several wetlands along the Alternate Route are also forested with dominant tree species that include green ash (*Fraxinus pennsylvanica*, FACW), boxelder (*Acer negundo,* FAC), and quaking aspen (*Populus tremuloides*, FAC). The shrub layer was dominated by boxelder (*Acer negundo,* FAC), shining willow (*Salix lucida,* FACW), and European buckthorn (*Rhamnus cathartica,* FAC). Dominant herbaceous species include lakebank sedge *(Carex lacustris,* OBL), reed canary grass (*Phalaris arundinacea,* FACW), and giant goldenrod (*Solidago gigantea,* FACW). Specific characteristics of wetlands along the Alternate route are summarized in the Wetland Delineation Report (**Appendix F, Exhibit 2**).

6.4 Waterbodies/Waterways (See Section 8.0 for additional information)

Waterways within the Project area were identified through a combination of wetland determination field investigations and review of multiple years of high-resolution aerial imagery, topographic data, and existing hydrologic data sets (WDNR 24K Hydrography layer). Field investigators and geospatial analysts used their best professional judgement to identify

waterway routes and ordinary high-water mark (OHWM) widths. No waterbodies were identified within the Project area. A summary of all waterways intersecting the Preferred and Alternate Routes is provided in **Appendix F, Table 2**, with additional details provided in the Wetland Delineation Report (**Appendix F, Exhibit 2**).

6.4.1 Proposed Waterbody or Waterway Crossings

Three named perennial waterways are mapped within the Project area and intersect both the Preferred and Alternate Routes; the Pigeon River, Fourmile Creek, and Sevenmile Creek. Fourmile Creek is intersected by the Preferred Route in two separate locations. Two additional mapped but unnamed intermittent waterways are intersected by the Alternate Route, one of which is also intersected by the Preferred Route and the other is intersected by the Common Route. Of these waterways, all were observed in the field. One additional unmapped waterway was field identified along the Preferred Route and three unmapped waterways were field identified along the Alternate Route. A Navigability Determination Request (NDR) has not been submitted to WDNR for these waterways. At this time, all waterways are assumed to be jurisdictional.

Pigeon River generally flows southwest before flowing into Lake Michigan and is designated as a cool-warm mainstem and headwater. It is known to be impaired for phosphorus levels and is classified as being in poor condition.

Sevenmile Creek flows east into Lake Michigan and is designated as a cool-warm headwater. This creek is also classified as having poor general conditions due to known impairments resulting from pollutants such as phosphorus.

Fourmile Creek flows southeast into Lake Michigan and is designated as a cool-cold to cool-warm headwater depending on the proximity to the mouth of the creek. General conditions are listed as unknown, but the river is managed for fishing and swimming and was not considered impaired as of 2014.

Project construction plans will avoid vehicle/equipment crossing of waterways to the extent practicable during implementation. Traditional TCSBs in accordance with WDNR General Permit conditions will be used if vehicle/equipment crossing of waterways is necessary. No work below the OHWM is proposed as part of this Project.

The Preferred and Alternate Routes intersect multiple waterways, as identified and summarized below in **Table 6.4.1-1**. Additional information about each waterway can be found in **Appendix F, Table 2**.

Table 6.4.1-1 - Summary of Waterway Crossings

Number of Waterways Crossed		
Preferred Route	**Alternate Route**	**Common Route**
6	8	1

6.4.2 Structures below the Ordinary High Water Mark (OHWM)

No structures are proposed to be placed below the OHWM for this Project.

6.4.3 Need and Method for Constructing Crossings

Based on preliminary access routes, it is anticipated that waterways may require vehicle/equipment crossing by TCSBs; these include four waterway crossings along the Preferred Route, one along the Alternate Route, and one waterway crossing planned along the Common Route. The need for TCSB crossings will be determined based on factors including but not limited to field conditions and landowner preferences. The remaining waterways will be crossed during wire pulling activities but will not require any vehicle/equipment crossing. **Appendix F, Tables 1 and 2**, provides a summary of all wetlands and waterways in the Project area, and identifies those areas where TCSBs are proposed to allow for safe and efficient construction access along the ROW.

Where necessary and authorized by the WDNR, the TCSB will be placed to avoid in-stream disturbance. Each TCSB will consist of construction mats and/or steel I-beam frames, or other similar material, placed above the OHWM on either side to span the stream banks. Removal of low-growing trees, shrubs, and other shoreline vegetation will be kept to a minimum. A drawing of a typical TCSB used during ATC construction is included as **Appendix F, Exhibit 4**.

6.4.4 Mitigating Construction Impacts – Waterway Crossings

For both the Preferred and Alternate Routes, the number of potential temporary stream crossings has been minimized in areas where construction can be completed by accessing the ROW on either side of the stream, from adjacent roads, or by use of existing bridges, culverted drives, or existing ford crossings. ATC will work with private landowners to identify alternative access routes to further reduce the use of stream crossings, when practicable.

Appropriate erosion control measures will be installed and maintained where soil disturbance occurs near waterways and at temporary waterway crossings until conditions are permanently stabilized. Other mitigation methods including invasive species prevention (Section 6.6) and re-vegetation and restoration plans (Section 6.9) will be employed during construction to further reduce potential impacts to waterways.

6.4.5 Identification of Special Waterways

The WDNR Surface Water Data Viewer was used to identify special designation waterways within the Project area. No ASNRI, Exceptional or Outstanding Resource Waters, Trout Streams, or Wild or Scenic Rivers exist along either the Preferred or Alternate Routes.

6.5 Rare Species and Natural Communities (see Section 9.0 for additional information)

A Certified Endangered Resources (ER) Review has been completed for both the Preferred and Alternate Routes of the Project and has been submitted to the WDNR Bureau of Natural Heritage Conservation (WDNR-BNHC) concurrently with this Application. Due to confidentiality requirements for the Wisconsin Natural Heritage Inventory (NHI) data, a redacted copy of the ER Review is included as **Appendix F, Exhibit 1**.

The state species list acquired from the NHI database were the same for both Routes. The Certified ER Review identified a total of two element occurrences within the Project review area which consisted of one threatened mussel species and one special concern bird species. ER Reviews find that both the Preferred and Alternate Routes have the potential to affect a single protected species and implementation of appropriate species avoidance measures will be required for both routes. See Section 9.0 for further discussion.

A review of federally listed species with the potential to occur on or near the Project area was conducted using the U.S. Fish and Wildlife Service (USFWS) IPaC (Information for Planning and Consultation) tool. The resulting species list were the same for the Preferred and Alternate Routes and included the Northern Long-eared Bat (*Myotis septentrionalis*), Red Knot (*Calidris canatus rufa*), Eastern Prairie Fringed Orchid (*Plantanthera leucophaea),* and Pitcher's Thistle (*Cirsium pitcher*i).

ATC will consult with the WDNR and the lead federal agency, USACE, will consult with USFWS to develop avoidance measures as necessary. If for any reason avoidance measures cannot be implemented, ATC will provide supplemental information required for the issuance of an Incidental Take Authorization or formal Section 7 Consultation.

6.6 Invasive Species (Uplands and Wetlands)

6.6.1 Invasive Species/Disease-Causing Organisms

The Project areas were evaluated for regulated invasive plant species during field investigations completed during the 2021 growing season. The general location and composition of invasive plant species present along Preferred and Alternate Routes were documented during environmental field surveys. The general locations of regulated invasive plant species will be shared with the Project team to help with avoidance and implementation of invasive species BMPs.

Regulated invasive plant species were commonly observed along both Routes and are typical of roadside, agricultural, and developed areas. It is assumed these species are present within Project areas that were not available for field survey. Overall, four invasive plant species were noted. Of these, three species fall into the "Restricted" category, while one falls into the "Prohibited" category of Wis. Admin. Code ch. NR 40. The observed species include:

Species observed	NR 40 Status
Autumn olive (*Elaeagnus umbellata*)	Restricted
Garlic mustard (*Alliaria petiolate*)	Restricted
European buckthorn (*Rhamnus cathartica*)	Restricted
Phragmites (*Phragmites australis)*	Prohibited/Restricted

The Project's location within Sheboygan County exists within the established state distribution of Oak wilt disease (*Bretziella fagacearum*) and is a quarantine county for Emerald ash borer (*Agrilus planipennis*). The Project's location is also within established quarantined Gypsy moth (*Lymantria dispar*) areas.

6.6.2 Mitigation Methods

BMPs will be implemented to comply with Wis. Admin. Code ch. NR 40 and Commission requirements. The intent of these practices is to prevent the introduction of invasive species to uninfected areas and limit the spread of invasive species already present onsite. Additionally, these practices will minimize the potential introduction, spread or transport of invasive species to off-site locations. General BMPs that may be used during construction are presented below.

- Avoidance through construction timing and alternative access;
- Proper management of construction vehicles and materials (i.e. storage, cleaning);
- Minimizing ground disturbance;
- Placing a barrier between construction vehicles and plants (i.e. construction matting);
- Proper storage and disposal of plant materials; and
- Promoting native regeneration.

To minimize the spread of oak wilt disease, ATC will avoid cutting or pruning oak trees during the restricted times outlined in Wis. Admin. Code § PSC 113.0511 (April 15 – July 1).

Standard practices that minimize the spread of emerald ash borer include avoiding the movement of ash wood (logs, posts, pulpwood, bark, slash, and chipped wood from tree clearing) from emerald ash borer quarantine areas to non-quarantine areas, as per Wis. Admin. Code § ATCP 21.17. Similarly, standard practices to avoid the spread of the gypsy moth include avoiding movement of wood from gypsy moth quarantine areas to non-quarantine areas, as per Wis. Admin. Code § ATCP 21.10. If cut vegetation cannot be left on-site, alternative plans will be developed to meet the requirements.

6.7 Historic Resources

6.7.1 Construction Location List

The proposed Project spans the towns of Herman, Mosel, and Sheboygan, and the village of Howards Grove in Sheboygan County, WI. The Preferred Route is located in Sections 23 and 24 of Township 16 North, Range 22 East, Sections 19, 20, 29, and 32 of Township 16 North, Range 23 East, and Sections 5 and 8 of Township 15 North, Range 23 East.

The Alternate Route is located in Sections 13, 14, 23 and 24 of Township 16 North, Range 22 East, Sections 17, 18, 19, 20, 21, 28, 29, 32 and 33 of Township 16 North, Range 23 East, and Sections 5 and 8 of Township 15 North, Range 23 East.

6.7.2 Wisconsin Historic Preservation Database Results

Pursuant to Wis. Stat. § 44.40, a review of the proposed transmission line routes and a one-mile buffer was conducted to determine the potential presence of archaeological and historic sites. ATC's consultant, Cardno, conducted an archival and literature review of cultural resources, architectural/historic resources, and previously recorded archaeological and burial sites along the proposed Project routes. To assess the potential effects of the Project on archaeological sites, cemetery/burial sites, and architectural/historic resources, the Archaeological Site Inventory, the Architecture and History Inventory and associated files, and the national and state registers of historic places were reviewed.

According to this review, two known archaeological sites are located within the Preferred Route ROW:

- Site 1: The site has not been evaluated for inclusion in the National Register of Historic Places. The site is recorded as likely to be destroyed by construction of Interstate 43, however, as mapped in the Wisconsin Historic Preservation Database (WHPD) the site extends outside the highway ROW. WHPD lists the site status as unknown. No structures are planned within the boundaries of this site, and construction plans will avoid vehicle and equipment access through this site.

- Site 2: As currently mapped, this site is outside the Preferred Route ROW, however recent investigations have encountered cultural material extending on both sides of Interstate 43 and only extended to the entry and exit ramps for Interstate 43. The site has not been evaluated for inclusion in the National Register of Historic Places. No structures are planned within the boundaries of the site, and construction plans will avoid vehicle and equipment access through this site.

A total of 37 previously identified architectural/historic resources are located within a one-mile radius of the two proposed routes. Of these, 35 of the architectural/historic resources have not been evaluated for eligibility for listing on the National Register of Historic Places. Three of these resources are located in close proximity to the Preferred Route. Six of these resources are located in close proximity to the Alternate Route. None of these resources will be directly impacted by either proposed Route as currently designed and aesthetic impacts will be minimized to the extent practicable.

Due to confidentiality requirements, a copy of the Cultural Resources Literature Review conducted by Cardno has been submitted to the PSCW Historic Preservation Officer under separate cover.

6.7.3 Project Impacts and Mitigation Measures

Two archaeological resources were identified within the Preferred Route ROW. Structures have been specifically located outside of these sites and no excavations are planned within the mapped boundaries of these sites. ATC will consider these resources during detailed design and will strive to avoid impacts to these resources. Avoidance and minimization will include avoiding access across the sites and minimizing ground disturbance as much as practicable (matting, tracked equipment, etc.).

6.8 Conservation Easements

The Project does not intersect any known conservation easements based on a review of conservation easement data available from the National Conservation Easement Database, Protected Areas Database of the United States, The Nature Conservancy Lands, the Wisconsin Department of Natural Resources, and the Wisconsin Department of Agriculture Natural Resources Conservation Service Easements.

The title search information has not been completed for the Project. Upon receipt of a PSCW Decision and Order, title searches will be completed. If additional information regarding conservation easements is discovered during the easement acquisition process, ATC will work with the landowner to accommodate the existing agreement or provide appropriate compensation to make them whole.

6.9 Restoration

Throughout Project implementation, inspections will be conducted on a routine basis to monitor disturbance to soils and vegetation and track the need for re-vegetation and restoration activities in accordance with Wis. Admin. Code Ch. NR 216 and the Wisconsin Pollution Discharge Elimination System (WPDES) general permit conditions. Documentation of inspections describing the re-vegetation progress and corrective measures taken will be maintained where applicable.

Site restoration will be completed as soon as practicable upon completion of transmission line and substation construction and as allowed by seasonal conditions. The need for and approach to site restoration and re-vegetation will be based on the degree of disturbance caused by construction activities and the ecological setting of each site. The actual restoration activities completed will be dependent on post-construction site conditions and landowner concerns. In areas where seed is needed to facilitate re-vegetation, the seed mix used will be appropriate to the surrounding area and similar to pre-construction conditions, and the seed bed will be adequately prepared to ensure successful germination. Seed mixes will not contain invasive species.

Upon completion of restoration, ATC will monitor each work location, including access routes, to ensure stabilization and re-vegetation occurs. Routine site inspections will continue until vegetative cover reaches 70% of its pre-existing condition. If required by the WDNR Utility General Permit conditions, additional monitoring to document restoration of wetland areas will be completed.

7.0 COMMMUNITY IMPACTS

7.1 Communication with Potentially Affected Public

In April, 2021 ATC mailed Project notification mailings to landowners within 300 feet of the proposed centerline as well as to state, county and municipal local officials and staff.

There were three versions of the project notification letter:

1. Landowners without an existing electric utility easement: These landowners received a version with a variable sentence stating that ATC records indicate one of the routes is on or near their property.
2. Landowners with an existing electric utility easement: These landowners received a version with a variable sentence stating that ATC records indicate one of the routes is on or near their property and that environmental surveys along the easement will commence the week of May 3, 2021.
3. Local Officials: Local officials received a version with a variable sentence stating that as a local official ATC thought they'd be interested in the project.

In addition to an 11"x17" Project overview map on the inside of the mailer, there were three 8.5" x 11" variable maps inserted onto the back page of the mail piece:

1. Sheboygan Town: Project extent for the town of Sheboygan for those owning parcels in the town or town specific local officials.
2. Mosel Town: Project extent for the town of Mosel for those owning parcels in the town or town specific local officials.
3. Herman Town/Howards Grove Village: Project extent for the town of Herman and village of Howards Grove for those owning parcels in the town and village or town and village specific local officials.

On all maps included in the Project notification mailers, the section of the Preferred Route along I-43 was displayed in the center of the interstate. A sentence in each letter indicated that this section was currently being studied and that the proposed side of the interstate had yet to be determined.

In June 2021, a follow-up notification was sent to landowners near the Preferred Route along I-43. This communication reminded landowners that when the initial notification was mailed in April 2021, the proposed side of the interstate for the Preferred Route had yet to be determined. It noted that upon review of proposed route alternatives, WisDOT informed ATC that construction of a transmission line along the western side of the interstate would not be permissible. Landowners were also informed that based on WisDOT review and feedback, ATC plans to submit the eastern interstate route alternative in the PSCW application.

A map displaying the eastern-interstate option for the proposed Preferred Route option was also included in the mailing. Copies of public outreach mailings are included in **Appendix E, Exhibit 1.**

Because of ongoing concerns and restrictions regarding indoor public gatherings due to Covid-19, ATC did not conduct any open houses for the Project.

In addition to the above-described public outreach, the Project has its own web page at the www.atc-projects.com website, which includes Project-related information as well as an interactive map. Direct mail pieces included references to the website as well as the ATC local relations contact for more information.

Direct mail pieces also included information regarding submission of electronic or written comments to the PSCW after ATC's submission of the Application. The docket number for the Project was also included.

7.2 Community Issues

At this time, no community issues have been identified.

7.3 Land Use Plans

Existing land use plans are provided in **Appendix A, Figure 7.**

7.4 Agriculture

Agricultural land uses were identified by both field observation and by review of aerial photography. Agricultural land cover is classified as properties used for active crop fields, pastures, recently fallow fields (old field), farmlot operations, and specialty crops (tree farms, orchards, cranberry bogs, etc.). Fields or other areas with no evidence of recent tillage or agricultural production were not included as agricultural land.

7.4.1 Type of Farming

The primary farming practice along both the Preferred and Alternate Routes is non-specialty row crops; generally hay, corn, and soybeans. Lands used for pasture and fallow fields are also located along the Alternate Route. The amount and type of agricultural land along the Preferred and Alternate Routes by Segment is detailed in **Appendix B, Table 2**.

The total agricultural land use along the Preferred Route is 24.97 acres or approximately 37% of the proposed ROW. The total agricultural land use along the Alternate Route is less, at 24.72 acres or approximately 33% of the proposed ROW.

7.4.2 Agricultural Practices affected by Project

The majority of segments along both the Preferred and Alternate Routes contain lands that are currently under a form of agricultural production. Cropland is the only agricultural practice that will be affected by the Project as no specialty agriculture has been identified within either Preferred or Alternate Route ROW. Due to agricultural BMPs of crop rotation, fallow years, and the planting of non-harvested cover crops, the type of crop affected is unknown at this time.

No irrigation systems are known to occur within the proposed Project area. Drainage tile may be present but has not been confirmed. Temporary impacts during construction may include crop loss, soil compaction, and damages to drain tiles. ATC will work with landowners to address drain tile concerns throughout construction planning and implementation.

The only permanent impact to agriculture will occur as a result of 18 transmission structures proposed to be installed within agricultural fields along the Preferred Route and 30 structures along the Alternate Route. Impacts from construction will be minimized through mitigation measures presented in Section 7.4.4.

7.4.3 Farmland Preservation Program

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), indicates that much of the Project area for the Preferred and Alternate Routes fall within the A-1 Prime Agricultural District. However, there are no parcels currently enrolled in the Farmland Preservation Program along the Preferred or Alternate Routes.

7.4.4 Mitigation of Construction Impacts – Agricultural Lands

As standard practice, ATC seeks to minimize construction impacts on agricultural lands. ATC will minimize impacts to agricultural lands through careful consideration of agricultural impacts during the routing and siting process and through the use of carefully planned construction access routes, timber matting for vehicle/equipment access and work pads to distribute equipment loads over a larger surface area and minimize compaction of soils. ATC will work with landowners through the design process to locate structures such that impacts to drain tiles are avoided or minimized to the extent practicable. Following construction, ATC will work with landowners to restore agricultural lands to pre-existing conditions through soil de-compaction, repair of drain tile if necessary, and appropriate compensation for any loss in productivity. ATC plans to hire an experienced Agricultural Specialist to work with farmers through negotiations, construction and restoration.

Upon receipt of an Order, ATC will coordinate with each agricultural landowner regarding farm operation, locations of farm animals and crops, current farm biological security practices, landowner concerns, and coordination of construction access routes.

The Project's expansion of the Howards Grove Substation and upgrades at the Erdman Substation will not result in any impact to agricultural lands as these locations are not under agricultural production.

7.4.5 Agricultural Impact Statement (AIS) Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP)

ATC has consulted with DATCP representatives and is submitting an Agricultural Impact Notification to DATCP concurrent with the filing of this Application. Please refer to **Appendix H** for correspondence with DATCP.

7.4.6 Neutral-to-Earth (NEV) and Induced Voltage

There are four (4) confined animal dairy operations located within ½ mile of the preferred route. However, there is no transmission/distribution that meets the collocation criteria for pre- and post-construction NEV testing. Therefore, pre- and post-construction NEV testing will not be required for the preferred route.

There are five (5) confined animal dairy operations located within ½ mile of the Alternate route. All these locations meet the transmission/distribution collocation criteria for pre- and post-construction NEV testing. Therefore, pre- and post-construction NEV testing would be recommended for these locations if the Alternate route is selected.

7.5 Residential and Urban Areas

There are ten homes located within 300 feet of the Preferred Route ROW, 36 homes within 300 feet of the Alternate Route ROW, and six homes within 300 feet of the Common Route ROW. The Common Route also contains two apartment buildings with a total of 79 units. No residences are within the ROW of either proposed Route.

Anticipated impacts to residences and the planned mitigation are described below:

Noise

A majority of the proposed transmission line is located in non-residential areas. The equipment noise levels of the laydown yards will be consistent with local truck traffic and equipment. The construction noise levels along the transmission line route including the substation sites will be equivalent to highway traffic and truck equipment throughout the remaining Project route.

Noise will be intermittent and not out of the ordinary for general truck traffic. Most truck and equipment noise will be from 7:00 am to 6:00 pm, Monday through Friday. Most trucks will leave the designated laydown yards each day during this time.

When undertaking construction activities around residences, ATC and its contractor will be cognizant of the residents and will limit work hours in that area, specifically during the early morning hours.

Dust

ATC and its contractor will be performing drilling operations for the installation of the transmission structures, and will not be creating large spoil piles in relation to this work. Dust impacts will be minimized in the residential areas. In addition, ATC and its contractors will clean up daily any dirt or mud that may be tracked onto private driveways, access roads, local roads or the highway.

Duration of Construction

Construction is anticipated to begin in May 2022 and end in late 2022.

Time-of-Day Construction

Construction work will generally occur Monday through Friday during daylight hours. Weekend work is also a possibility. Night work is a potential to reduce public impact during highway crossings.

Road Congestion

Construction vehicles will use public roads to access the ATC ROW. There may be occasions when construction vehicles are parked on roads during construction. ATC will minimize the number and amount of time vehicles are parked on the roads. All current traffic control measures will be adhered to while equipment is on a public roadway.

Impacts to Driveways

The only driveways ATC and its contractor anticipate using are driveways on which ATC receives specific landowner permission to travel or park equipment. ATC will ensure residence driveways are not blocked with equipment.

7.6 Aesthetic Impacts

No photos simulations were requested by Commission Staff. No scenic roads were identified in the Project area.

7.7 Parks and Recreation Areas

No parks or recreation areas were identified within the Project area of either the Preferred or Alternate Route. The only recreational areas identified were designated bike lanes on city streets of Segment F which is shared by both Routes.

Short term impacts to bike lane use may result from traffic mitigation during active construction. Worker safety practices may require the need to alter the flow of traffic and close lanes of use, including the bike lane, to provide a safe working environment for crews operating near roadways. No alterations are planned within any roadways, so once traffic control

measures are no longer needed, all traffic and pedestrian lanes would be returned to their original functionality.

No long-term impacts to these features are anticipated as a part of the Project.

7.8 Airports

7.8.1 Location of Private and Public Airstrips

ATC identified three public and private use airports and heliports within five miles of the proposed route centerlines. A list of the airports and heliports and their corresponding locations are provided in **Table 7.8.1-1**.

Table 7.8.1-1 – Airport Information

Segment	Airport Name	Distance from Centerline	Type Airport / Use	City
F	Sheboygan County Memorial Airport – SBM	4.5 miles	Airport / Public	Sheboygan
F	Aurora Sheboygan Memorial Medical Center – WS18	3.0 Miles	Heliport / Private	Sheboygan
F	St. Nicholas Hospital – WS56	2.1 Miles	Heliport / Private	Sheboygan

7.8.2 Description of Airports

Under the provisions of 14 C.F.R. Part 77 (Part 77), the Federal Aviation Administration's (FAA) objective is to ensure safe and efficient use of the navigable airspace for public use and military airports and heliports (facilities). To accomplish this objective, the FAA conducts aeronautical studies of proposed and existing structures provided to the FAA in Form 7460-1, Notice of Proposed Construction or Alteration (Notice). The criteria for filing a notice are defined in Part 77.9. Part 77 does not typically apply to private use facilities, except those that have FAA approved plans or procedures. Nevertheless, ATC used the same imaginary surface requirements that the FAA enforces on public use airports when evaluating the proposed route corridors and potential impacts to private use facilities. The description of facilities and evaluation of impacts is discussed below.

The Sheboygan County Memorial Airport (SBM) is a public airport near Sheboygan, Wisconsin. The latitude/longitude of the airstrip is 43.7694 N/ 87.8515 W at an elevation of 755 feet. There are two runways total. One runway with a concrete surface (4/22) that is 6800 feet in length

runs in a northeast/southwest alignment. A second runway with an asphalt surface (13/31) that is 5002 feet in length runs in a northwest/southeast alignment. This airport is approximately 4.5 miles from Segment F. The proposed alignment does not impact the FAA imaginary surface requirements, though filing is required (See FAA Documentation section 7.8.4).

The Aurora Sheboygan Memorial Medical Center (WS18) heliport is a privately-owned heliport in Sheboygan, Wisconsin. The latitude/longitude of the helipad is 43.7719 N/ 87.7102 W. The helipad has an asphalt surface at an elevation of 749 ft and is 57 feet by 92 feet. The helipad is approximately 3.0 miles from Segment F. The proposed alignment does not impact the FAA imaginary surface requirements.

The St. Nicholas Hospital (WS56) heliport is a privately-owned heliport in Sheboygan, Wisconsin. The latitude/longitude of the helipad is 43.7613 N/ 87.7488 W. The helipad has a concrete surface at an elevation of 680 ft and is 41 feet by 41 feet. The helipad is approximately 2.1 miles from Segment F. The proposed alignment does not impact the FAA imaginary surface requirements.

7.8.3 Impact to Aircraft Safety

The Project is governed by Wis. Stat. §§ 196.491(3)(i). Where structure heights meet FAA requirements but would otherwise be further restricted by height limitation zoning ordinances, ATC is not subject to those zoning ordinances but will work with the impacted local units of government to reasonably address their concerns.

7.8.4 Potential Construction Limitations and Permit Issues

ATC used the FAA Notice Criteria Tool to determine which structures in the Project would require filing with the FAA. The FAA Notice Criteria Tool has been checked for all proposed structure locations. Portions of the proposed alignments require notice to the FAA either due to proximity or height. Each structure was checked in the Notice Criteria Tool at a height of 199 ft. For locations that would require filing for height of 199 ft or less, the "Height Exceeded By" value in the Notice Criteria Tool was compared to the expected height of the structure and determined to be below the stated height. Structures will be filed for the actual height on the ordered route once design is completed. Documentation of the FAA Notice Criteria Tool checks along with a summary of checks performed and results are included in **Appendix H, Exhibit 2**.

7.9 Communication Towers

To determine the types of communication towers near the Project area, a search of available Federal Communications Commission databases was conducted and all communication towers located within a 5 mile range were identified. A location map showing all communication facilities within the 5 mile range can be found in **Appendix A, Map 3** as well as the included GIS data files.

7.10 Community Income

This section is not applicable to this Project because the proposed facilities are designed for operation at less than 345 kV.

8.0 WDNR PERMITS AND APPROVALS

WDNR permit authorizations will be required for both the Preferred and Alternate Route options. Information necessary to review the Project for wetland and water resource permitting is provided within this section and associated Appendices.

ATC anticipates that the reporting WDNR Utility General Permit (WDNR-GP3-2018) or Wetland Individual Permit, pursuant to Wis. Stat. § 281.36 and Wis. Admin. Code chs. NR 103 and 299, will be required for this Project. Wetland impacts will include the temporary placement of timber matting, installation of TCSBs, placement of permanent structural fill, and conversion of wooded wetland to herbaceous wetland community. The documentation required by the WDNR to review the Project in consideration of the Utility General or Individual Permit is provided in the subsections below and in **Appendix F**.

A WPDES Storm Water Discharge Permit, pursuant to Wis. Stat. ch. 283 and Wis. Admin. Code ch. NR 216, is anticipated to be required for ground disturbing activities exceeding one acre. This permit application will be submitted following receipt of an Ordered Route.

Waterway Crossings

Preliminary access plans anticipate that four waterways may require crossing by TCSBs along the Preferred Route, one TCSB may be necessary along the Alternate Route, and one TCSB may be necessary along the Common Route. Where possible, waterways intersected by the Project will be crossed using existing culverts and bridges.

Waterway crossings are included in the Wetland and Waterway Impact/Crossing Table (**Appendix F, Table 1**). A summary of all waterways intersecting the Preferred and Alternate Routes is provided in **Appendix F, Table 2**, with additional details provided in the Wetland Delineation Report (**Appendix F, Exhibit 2**).

These proposed crossings require approval by the WDNR under Wis. Stat. § 30.123. These waterways are less than 35 feet wide at the OHWM and the crossings are designed to meet the standards and conditions for TCSB crossings in Wis. Admin. Code § NR 320.06. Wis. Admin. Code § NR 320.04 indicates that bridges spanning navigable waterways shall maintain a clearance of not less than five feet unless all the following conditions specified in NR 320.04(3) are met:

- The waterways likely have little or no navigation or snowmobile use;
- The waterways are not anticipated to have navigational use other than lightweight craft;
- A portage is provided over or around the bridges or culverts; and
- The reduced clearance would not be detrimental to the public interest.

Where the conditions specified in Wis. Admin. Code Chapter § NR 320.04(3) are met, waterway crossings will not require a five-foot minimum clearance.

Discharges to Wetlands

Transmission structures to be placed in wetlands are summarized in Section 6.3.2. This is a preliminary estimate based on the number of structures within wetland as currently designed. Where possible during detailed engineering design, new structures will be located to the edge or outside of wetland. The proposed impacts to wetlands for each proposed Route are detailed in **Appendix F, Table 1**. Proposed discharges to wetlands are summarized below.

ATC conservatively estimates that 132 square feet (0.003 acres) of permanent fill will occur as a result of nine new structures installed within wetland along the Preferred Route. Conservative estimates along the Alternate Route include 90 square feet (0.002 acres) of permanent fill as a result of seven new structures installed within wetland. The Common Route is estimated at 37 square feet (<0.001 acres) of permanent fill as a result of one new structure installed within wetland. Based on the location and extent of wetlands in the Project area, engineering constraints, and consideration of landowner impacts, locating all new structures outside of wetland is not practicable.

Temporary timber matting and placement of TCSBs will be required to gain vehicle/equipment access to complete the necessary scope of work. Conservative estimates of temporary wetland impacts associated with matting include 132,585 square feet (3.04 acres) along the Preferred Route, 36,346 square feet (0.83 acres) along the Alternate Route, and 14,520 square feet (0.33 acres) of temporary wetland impacts along the Common Route.

It is likely that the Project will require temporary mat placement in wetlands for greater than 60 days between May 15 and November 15. ATC plans to develop a Project specific matting restoration plan to establish and document performance standards for recovery of wetlands following mat removal and restoration activities.

8.1 WDNR Tables for Wetlands and Waterways

The WDNR Wetland and Waterway Impact/Crossing Table (Table 1) and the WDNR Wetland and Waterway Inventory Table (Table 2) are included in **Appendix F**, **Tables 1 and 2,** and detail wetland and waterway data for both the Preferred and Alternate Routes.

8.2 Wetland Practicable Alternatives Analysis

8.2.1 Corridor and Route Selection Process

Wetland avoidance was considered during all phases of the route selection and structure siting process. Desktop wetland indicator data and aerial imagery was continually referenced as viable routes were narrowed down to the proposed Preferred and Alternate Routes. Field wetland determinations were conducted within accessible areas (existing easement and public ROW) on May 3 to May 7, 2021. All areas where access permissions had not been obtained (inaccessible areas) were readily observed and assessed from adjacent accessible areas to verify

or refine wetland boundaries identified during background data reviews. The methodology of the wetland field surveys and desktop review are described further in **Section 8.3**. Wetlands identified within the Project area are depicted on **Appendix A, Figure 3A**. All wetlands identified within the Project area will be incorporated into Project planning and detailed design to further minimize wetland impacts to the extent practicable.

Both the Preferred and Alternate Routes were selected to take advantage of existing transportation and utility corridors and to minimize the amount of wetland impacts and potential wetland conversion.

The planned expansion of the Howards Grove Substation to the east will not result in any wetland impacts as it was specifically designed to avoid impacting the wetlands to the south and west of the existing substation footprint.

8.2.2 Wetland Impact Minimization

All proposed route segments have been selected to avoid and minimize wetland impacts to the extent practicable. Wetland impact estimates described in this section are conservative as the final engineering design will attempt to relocate structures to the edge of or outside of wetlands when possible. Based on the location and extent of wetlands in the Project area, engineering constraints, and consideration of landowner impacts, locating all new structures outside of wetland is not practicable.

Several proven methods will be employed during construction implementation to reduce impacts to the wetlands intersected by the Project. The primary means for wetland impact minimization will be to limit, to the extent practicable, the operation of heavy construction equipment in wetlands. When construction access through a wetland cannot be avoided, disturbance to wetlands will be reduced by using construction matting, low-ground pressure equipment, or accessing during dry or frozen conditions.

Final construction access plans will consider opportunities to minimize temporary construction impacts to wetlands to the extent practicable by the following techniques:

- Attempts will be made to avoid access through wetlands that occur in only a portion of the ROW;
- Previously existing access routes within wetlands will be utilized when possible;
- Access from uplands at either end of certain wetlands may be used so travel through the entire length of wetland is not necessary;
- Complete all necessary construction activities during the same mobilization so that each wetland is only temporarily impacted and restored once.

BMPs to prevent the introduction and spread of invasive species will be implemented as detailed in Section 6.6 to help further minimize construction impacts to wetlands. Upon completion of construction, ATC will complete site restoration and re-vegetation efforts consistent with the activities described in **Sections 5.5.2 and 6.9**.

8.2.3 Practicable Alternative Analysis

Routing and siting of the Preferred and Alternate routes considered several factors while striving to avoid and minimize wetland impacts to the extent practicable. Factors that were considered during the routing and siting process included, but were not limited to, available materials and technology (design and construction methods used to minimize wetland impacts), existing land use and development (weighing water resource avoidance with proximity to residential and/or other buildings, agricultural impacts, and design constraints), cost (relative to water resource avoidance and environmental benefit considering Project budget) and minimization of impacts to other sensitive resources. The Preferred and Alternate Routes were developed with careful consideration of the factors described above. However, due to the frequency and distribution of water resources in the area, complete avoidance of wetlands by the Project is not feasible.

Accounting for the overall Project purpose, the scale of the Project, and consideration of practical limitations (including but not limited to cost, available materials and technology, existing land use and development, and impacts to other sensitive resources), ATC was unable to identify a practicable alternative that would completely avoid wetland impacts. While the Preferred route would result in greater permanent and temporary wetland impacts, it is less impactful to existing land use and landowners. The Preferred route is also the least costly, takes best advantage of existing utility and transportation corridors and is least impactful to residential properties.

8.2.4 Wetland Impacts

Both the Preferred and Alternate Routes will result in wetland impacts including permanent and temporary wetland fills and forested wetland conversion. Wetland impact calculations are summarized below and detailed in **Appendix F, Table 1**. Permanent fill will occur because of new structures placed in wetland while temporary fill will occur due to the placement of timber matting in wetland for construction vehicle/equipment access. Both the Preferred and Alternate Routes require clearing of new ROW with ongoing vegetation maintenance which will result in conversion of forested wetland to herbaceous wetland community.

Along the Preferred Route, it is estimated that 132 square feet (0.003 acres) of permanent wetland fill will occur as a result of nine new structure installations. Of these impacts, approximately 36 square feet will occur in degraded fresh (wet) meadow, 84 square feet will occur within shallow marsh, and 12 square feet will occur within what is currently hardwood swamp (ROW clearing would occur prior to construction). Up to 132,585 square feet (3.04 acres) of temporary matting may be placed in wetlands along the Preferred Route to facilitate construction access. Area of matting impact is based on preliminary construction plans.

Along the Alternate Route, it is estimated that 90 square feet (0.002 acres) of permanent wetland fill will occur as a result of seven new structure installations. Of these impacts, approximately 66 square feet will occur within degraded fresh (wet) meadow and 24 square

feet will occur within what is currently hardwood swamp (ROW clearing would occur prior to construction). Up to 36,343 square feet (0.83 acres) of temporary matting may be placed in wetlands along the Alternate Route to facilitate construction access. Area of matting impact is based on preliminary construction plans.

Along the Common Route, it is estimated that 37 square feet (0.002 acres) of permanent wetland fill will occur as a result of one new structure installation in degraded fresh (wet) meadow. Up to 14,520 square feet (0.33 acres) of temporary matting may be placed in wetlands along the Common Route to facilitate construction access. Area of matting impacts is based on preliminary construction plans.

New ROW development will require clearing an average width of 80 feet and will result in conversion of forested wetland to herbaceous wetland community. Clearing for new ROW will result in up to 94,944 square feet (2.18 acres) of forested/shrub wetland conversion along the Preferred Route. The Alternate Route will result in up to 53,462 square feet (1.23 acres) of forested wetland conversion.

The estimated amounts of permanent and temporary wetland fills proposed for both the Preferred and Alternate Routes falls within the thresholds for WDNR General Permit (WDNR-GP3-2018) coverage. However, as described above, the amount of forested wetland conversion for the development of new transmission line ROW will exceed the one-acre threshold allowed under the General Wetland Standards of WDNR-GP3-2018. Therefore, both the Preferred and Alternate Routes are anticipated to require an Individual Wetland Permit to be issued by the WDNR.

If determined necessary by the regulating agencies, ATC will provide for compensatory wetland mitigation by purchasing available credits from a wetland mitigation bank, or from the WDNR in-lieu fee program if suitable credits are not available. If mitigation is required, ATC will consult with the USACE and WDNR regarding available bank or in-lieu fee credits.

Table 8.2.4-1 – Permanent and Temporary Wetland Fills

Preferred Route			
Wetland Community	**Permanent Fill**	**Temporary Fill**	**Wetland Conversion**
Degraded Fresh (Wet) Meadow	36 ft^2 (<0.001 acres)	33,557 ft^2 (0.77 acres)	-
Shallow Marsh	84 ft^2 (0.002 acres)	71,988 ft^2 (1.65 acres)	-
Hardwood Swamp	12 ft^2 (0.001 acres)	25,860 ft^2 (0.59 acres)	79,343 ft^2 (1.82 acres)

Floodplain Forest	-	-	8,199 ft^2 (0.19 acres)
Shrub Carr	-	1,180 ft^2 (0.03 acres)	7,401 ft^2 (0.17 acres)
Total	**132 ft^2 (0.003 acres)**	**132,585 ft^2 (3.04 acres)**	**94,944 ft^2 (2.18 acres)**
Alternate Route			
Degraded Fresh (Wet) Meadow	66 ft^2 (0.001 acres)	28,120 ft^2 (0.65 acres)	-
Shallow Marsh	-	1,826 ft^2 (0.04 acres)	-
Hardwood Swamp	24 ft^2 (<0.001 acres)	6,400 ft^2 (0.15 acres)	52,243 ft^2 (1.20 acres)
Floodplain Forest	-	-	1,219 ft^2 (0.03 acres)
Total	**90 ft^2 (0.002 acres)**	**36,346 ft^2 (0.83 acres)**	**53,462 ft^2 (1.23 acres)**
Common Route			
Degraded Fresh (Wet) Meadow	37 ft^2 (<0.001 acres)	10,540 ft^2 (0.24 acres)	-
Shallow Marsh	-	3,980 ft^2 (0.09 acres)	-
Total	**37 ft^2 (<0.001 acres)**	**14,520 ft^2 (0.33 acres)**	-

8.3 Wetland Delineations

Cardno used a combination of delineation and determination methods to identify aquatic resources within the study area from May 3 to May 7, 2021. Where formal delineation methods were used, Cardno followed the *U.S. Army Corps of Engineers 1987 Wetland Delineation Manual* and the *Regional Supplement to the USACE Delineation Manual: Northcentral and Northeast Region, Version 2.0* (Environmental Laboratory, 2012). The procedures outlined in the *Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and Wisconsin Department of Natural Resources* (USACE 1996) were followed and *The National Wetland Plant List: State of Wisconsin 2016 Wetland Plant List* (Lichvar *et al*., 2016) was used to determine wetland indicator status of observed plant species. Wetland communities were classified based on the Wetland Plants and Plant Communities of Minnesota and Wisconsin, Version 3.2 (Eggers and Reed, 2015). Site boundaries are identified on the figures attached to this report. Wetland and water resources identified within the Project area are depicted in **Appendix A, Figure 3A**. The Wetland Delineation Report is included in **Appendix F, Exhibit 2**.

Offsite Review

Identification of wetlands utilized a combination of desktop resources and field visits to determine wetland boundaries within the Project area. Initial desktop review was conducted for the entire Project area to identify locations that displayed a potential wetland indicator. As part of desktop analysis, the following resources were reviewed:

- WisconsinView and WDNR Statewide LIDAR (two-foot contours were generated from this data)
- USDA-NRCS Web Soil Survey Database for Sheboygan County, Wisconsin
- WDNR Surface Water Data Viewer
    - Wisconsin Wetland Inventory (WWI) Mapping
    - Maximum Wetland Extent Indicator
    - WDNR Mapped Waterways
- United States Geological Survey (USGS) Topographical Map
- Google Earth 1992 – 2015 Historic Aerial Imagery
- Sheboygan County 2020 Aerial Imagery
- ESRI Basemap 2017 Aerial Imagery
- USDA-NRCS Agricultural Applied Climate Information System WETS Station Data

A location was considered to contain an indicator of wetland conditions if it contained a WWI mapped wetland, a maximum extent wetland indicator, WDNR mapped waterway, a mapped soil unit with a hydric rating greater than zero, a topographic feature indicting wetland (depression, swale, etc), or if any wetness signatures were observed during historic aerial photo review. The wetland indicators and farmed wetland signatures identified during desktop reviews were used to inform field surveys though all Project areas were field surveyed regardless of desktop wetland indicators.

In addition to the reviews described above, the methods outlined in the *Guidance for Offsite Hydrology/Wetland Determination* (BWSR 2016) were followed to conduct a farmed wetland determination (FWD) to identify potential wetland areas in agricultural lands within the Project area. Nine (9) years of imagery were reviewed between the years of 2004 and 2020 and ranging in months between July and September. The NRCS WETS Analysis for each year was calculated using the three months prior per date of imagery. The FWD is provided within the Wetland Delineation Report included as **Appendix F, Exhibit 2**.

Onsite Review

Cardno staff conducted field investigations from May 3 to May 7, 2021. Data was collected on the observed vegetation, hydrology, and soils at the site. Due to limited access permissions at the time of survey, the field investigations were focused within existing ATC-owned easements and public road ROW. Areas where access was not granted were visually assessed from adjacent road ROW. Because the proposed transmission line routes were designed to follow existing ATC-owned easements and to parallel the edge of road ROW, Cardno staff were able to investigate all Project areas either directly or by adjacent visual assessment to identify all wetland areas contained within the proposed ROW for both Route options.

Where adjacent visual observations were necessary during field surveys, wetland boundaries were conservatively estimated based on the presence of mapped wetland indicators described above in combination with observed site conditions.

Where formal delineation methods were used, data points were documented using the Wetland Determination Data Forms – Northcentral and Northeast Region. Vegetation data collected includes the presence and abundance of observed species. Soils were evaluated to a depth of 24 inches when possible. Soil profiles were described using a Munsell soil color chart. *Regional Supplement to the USACE Delineation Manual: Northcentral and Northeast Region, Version 2.0* was used to determine if a hydrophytic plant community was present, to identify observed hydric soil indicators, and to evaluate the presence/absence of primary and secondary hydrology indicators. Additionally, a general description of landscape position, hydrological connectivity, disturbances, and naturally problematic situations were assessed.

Data points were located in the wetlands and adjacent uplands generally following a transect approach. Changes in observed vegetation, soils, and hydrology were used to determine wetland boundaries. Wetland boundaries and data point locations were collected using sub-meter GPS technology.

Wetland Confirmation

WDNR wetland boundary confirmation is requested as part of the Commission's review of the proposed Project. ATC believes all information necessary to confirm wetland communities and their boundaries is provided within this Application and Appendices.

8.4 Mapping Wetland and Waterway Crossings

Environmental Access Plan Maps are provided in **Appendix A, Figure 3B**. This figure set depicts the Project scope as well as field identified wetlands and waterways, construction access and matting plans, and proposed TCSB locations. Environmental maps that indicate delineated wetlands and waterways, WDNR mapped wetlands and waterways, and mapped hydric soils are provided as an attachment to the Wetland Delineation Report provided in **Appendix F, Exhibit 2**. These maps include the required wetland and waterway mapping information as listed below.

- Recent aerial photo
- Transmission line
- ROW
- Pole locations and numbering
- Waterways
- Wisconsin Wetland Inventory
- Delineated wetlands
- Hydric soils
- Proposed temporary clear span bridge locations (labeled to correlate with WDNR Table 1 (see **Appendix F, Table 1**))
- Locations for other Chapter 30 activities such as grading or riprap (labeled to correlate with WDNR Table 1 (see **Appendix F, Table 1**))

9.0 ENDANGERED, THREATENED, SPECIAL CONCERN SPECIES AND NATURAL COMMUNITIES

Pre-application discussions with WDNR staff were held to determine the information necessary to be included in this application. The following sections and redacted Certified Endangered Resources Review (ER Review) provided in **Appendix F**, **Exhibit 2,** provide all information requested.

9.1 WNDR Endangered Resources Review

A Certified ER Review covering both the Preferred and Alternate Routes was submitted to the WDNR Bureau of Natural Heritage Conservation (WDNR-BNHC) on May 12, 2021. The WDNR-BNHC approved the ER Review and provided concurrence and recommendations on May 19, 2021. Due to its confidential status, a redacted version of this review has been provided in **Appendix F, Exhibit 2**. The WDNR NHI database was accessed to identify all state-listed rare species (threatened, endangered, or special concern), natural communities, and other natural features with documented element occurrences within one mile of the Project segments for terrestrial and wetland species, and within two miles for aquatic species occurrences. In addition to providing an inventory of rare species and communities, the ER Review also outlines the required follow-up actions necessary to prevent impacts to state-listed threatened and endangered animal species, federally-listed plants and animals, as well as follow-up actions that are recommended to help conserve rare species, communities, or other natural features that are not legally protected or are exempt from protection by the Project (i.e. special concern animal species, threatened, endangered, and special concern plant species, and natural communities).

9.2 NHI Occurrences

Appendix F, Exhibit 2 contains a redacted copy of the Certified ER Review that discusses all NHI element occurrence records based on a review of the WDNR NHI database on May 12, 2021. The Certified ER Review finds no difference in element occurrence records between the Preferred and Alternate Routes. Maps of these element occurrences along the Project area have been provided under a separate cover with the confidential Certified ER Review.

A total of two element occurrences were identified during the Certified ER Review and include one special concern bird species, and one threatened mussel species. No element occurrences for natural communities or other features were present along either the Preferred or Alternate Routes.

The Certified ER Review results demonstrate that general disturbance minimization and implementation of erosion control measures will be required near waterways to avoid impacts to protected species and to comply with state and/or federal endangered species laws. The

review also recommends the following measures to avoid impacts to species without legal protection.

- Conduct construction activities outside of the February 1st to July 31st timeframe to prevent impacts to a special concern bird species.
- Implement invasive species protocols as discussed in **Section 6.6**.

ATC will follow these WDNR recommended species avoidance measures to the extent practicable by attempting to avoid or minimize Project disturbances during the recommended timing restriction and through implementation of invasive species prevention measures.

9.3 Results of Habitat/Natural Community Assessments and Biological Surveys

During field surveys in the spring of 2021, Cardno biologists noted habitat features within the Project area that may be associated with rare species with element occurrences documented in the Certified ER Review. In addition to these field efforts, desktop resources were used to evaluate potential habitat features where field access was unavailable.

While habitat features were generally characterized during environmental field surveys, no formal habitat assessment or species-specific surveys were conducted as ATC is assuming their presence and will adhere to all required avoidance measures. As described in **Section 9.2** and in the ER Review submitted to WDNR, ATC anticipates general impact minimization and implementation of erosion control measures near waterways will be required to prevent potential for impacts to protected species. ATC will adhere to all recommended measures to the extent practicable.